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Inside Dope

By GEORGE F. TAUBENECK

Learn to live and laugh — thus delay your epitaph

Stories of the Week
Add Definitions
No City Slickers, We
Business Will Zoom, Say Taylor and Prof. Slichter
Good News for Good Men
Early Air Conditioning

Stories of the Week

"Yass," a prisoner told his cellmate, "I was making big money. About an eighth of an inch too big."

Neighborhood grocery store proudly window-advertised:

"Imported Groceries."

Across the street a Greek competitor countered with this happy slogan:

"Imported Grocer."

This department has found a kindred soul in William Eden, father of England's former prime minister, Anthony Eden.

In his new book, *Any Number Can Play,* Clifton Fadiman reveals that old William's favorite pastime was hurling barometers which read "Fair" out into the rain and fog.

"There, you damned fool," he'd say, "see for yourself."

Queen Elizabeth and Prince Philip were guests at the Maryland-North Carolina romp in October. To Maryland's Gov. McKeldin, Britain's Queen addressed a pertinent query:

"Where do you get all these big football players?"

"Your Majesty," Gov. McKeldin blushed (maybe it was the nippy autumn air), "that is an embarrassing question."

Add Definitions

GENTLEMAN: A patient wolf.

OLD TIMER: Person who remembers when you were able to buy a tub, a washboard, and a wringer for less than the service charge they make just to check your automatic washing machine.

"Don't look now," said one fly to another, "but your man is open."

Be kind. Remember, everyone you meet is fighting a hard battle.

No City Slickers, We

Manufacturer's field sales representatives frequently are surprised by the readership "strength" of AIR CONDITIONING & REFRIGERATION NEWS in small towns and middle size cities.

(Concluded on Page 12, Col. 1)

Mfrs. '56 Packaged Cooling Shipments Up ⅓ over '55, Census Bureau Says

WASHINGTON, D. C.—U. S. manufacturers shipped nearly $500 million worth of packaged air conditioning equipment during 1956, almost exactly one third more than they did in 1955, statistics released recently by the U. S. Bureau of the Census show.

Their shipments of all types of air conditioning equipment showed a healthy gain over 1955, the figures reveal.

The Bureau's annual compilation of data on the quantity and value of manufacturers shipments of air conditioning and refrigeration equipment indicated gains for most types of refrigeration equipment and components, too.

The 1956 figures, compared with final, revised data for 1955, appear in a series of seven tables on pages 25, 26, and 27 of this issue. What these figures mean in terms of gains or losses from 1955 to 1956 is spelled out in this article.

The data presented in the tables, the Bureau says, are

(Concluded on Page 25, Col. 4)

GAS REFRIGERATOR

Whirlpool May Buy Servel Facilities

DETROIT — Though no one would speak for publication yet, there were persistent reports from several sources last week that Whirlpool Corp. was about to announce that it will purchase Servel, Inc.'s idle gas refrigerator plant and produce a domestic gas refrigerator.

One report said that the announcement may come this week.

When queried earlier by the NEWS, Juel M. Ranum, assistant to the president of Whirlpool Corp. and director of public relations, admitted that Whirlpool was having conversations with gas utility executives, "similar

(Concluded on Page 4, Col. 5)

What Makes a Good Distributor?

CHICAGO — Self-made, independent distributor is best kind for packaged air conditioning and refrigeration products, says Austin Rising, vice president in charge of marketing for York Div., Borg-Warner Corp.

York, he says, would rather have them than the factory branches. *He tells qualities York looks for in a prospective distributor on page 6 of this issue.*

Portable Room Units Lead Hotpoint Line

CHICAGO—Three new portable air conditioners with capacities of up to 8,000 B.t.u. highlight the 1958 appliance lines recently introduced by Hotpoint Co., a division of General Electric Co.

For 1958, Hotpoint also bowed eight other models of room air conditioners, eight combination refrigerator-freezer models, four refrigerator models, three upright freezers, and four chest freezers.

In addition, built-in ranges, ovens, refrigerators, freezers, dishwashers, and complete modular kitchens in some 20 different "Customline" models were announced.

The new portable air conditioners, it is reported, include a 7½-amp., 115-volt unit; a 12-amp., 115-volt unit; and a 12-amp., 230-volt unit.

Claimed to be the smallest and lightest weight 1-hp. porta-

(Concluded on Page 11, Col. 1)

Commercial Section Next Week

De Fino Elected Hupp Vice Pres.

CLEVELAND — Anthony J. De Fino has been elected vice president of Hupp Corp., according to Don H. Gearheart, president.

A. J. De Fino

De Fino joins Hupp after serving since October, 1955, as vice president and general manager of the All-Year Air Conditioning Div. of Servel, Inc. Previously he was vice president and general manager of the Buffalo Div. of Fedders-Quigan Corp. De Fino had also served in an engineering and sales capacity for the refrigeration and automotive divisions of Fedders.

In 1954, he was elected president of the Air-Conditioning & Refrigeration Institute, becoming chairman of its executive committee in 1955. He is presently a member of the group's board of directors and advisory committee.

NHAW on Service

Cooling Costs Top Heating Service

CHICAGO — Air conditioning service costs run 10 times as much as heating service, heating wholesalers were informed at a panel discussion here recently.

Discussing sales promotion, the National Heating & Airconditioning Wholesalers, Inc. debated how much help they should give their dealers and what forms it should take. *Wholesaler comments on how they handle service, advertising, and engineering layouts appear on page 7.*

Drayer's 'Peak Production' To Hold over Holidays

LOS ANGELES — For the first time in its 47-year history, Drayer-Hanson will not lay off any of its factory hands over the holiday season, C. W. Pollock, manager of air conditioning and refrigeration, announced.

"Peak production at our main plant facility will replace the slump heretofore typical of the industry in mid-winter," Pollock said.

'Ionitron' To Be Optional on '58 Philco Room Units

PHILADELPHIA — Philco Corp.'s exclusive negative ion generator—the "Ionitron"—will be available as an optional accessory in all 1958 room air conditioner models, it was announced by Jack Cherry, general manager of Philco's Air Conditioning Dept.

The 1958 room air conditioners include 12 models, three in the 1-hp. "Bantam" models and nine in the "Compact" series, including two reverse-cycle heat pump models. An additional series, called "Transitone," will be announced later.

The Ionitron will be available in kit form from dealers for the Bantam models and will be factory installed in the Compact series. Suggested list price is $50.

Two negative ion generating models were introduced in 1957 by Philco on the basis that negative ionization brought relief to the sufferers of air-borne allergies.

"New ionization studies," said Cherry, "now show that nega-

(Concluded on Page 25, Col. 1)

AGA Will Try To Whet Gas Utilities' Cooling Interest

LOS ANGELES—A series of seven symposiums in principal cities around the United States has been arranged by the "air conditioning promotion committee" of the American Gas Association.

Purpose of the symposiums is to build enthusiasm with programs encouraging gas compa-

(Concluded on Back Page, Col. 1)

NY Council OKs New Code for Refrigeration

To Become Law If Mayor Signs Bill

NEW YORK CITY — A new refrigeration code for the city of New York has finally won the approval of the city council and board of estimates and goes to the mayor for his signature this week.

Approval ends a six-year fight by the Commerce & Industry Association and other interested groups to revise the 1927 code the city has been operating under for the past 30 years.

Details of the new code will be published by the NEWS when it becomes official.

Major changes will include recognition of modern-type refrigerants as non-toxic, non-irritating, and non-flammable; recognition that permissible quantity of any refrigerant should be governed by the cube of the space in which the unit is situated; flexibility of system design; substantial amendment of requirements for operators of refrigerating systems; and wider use of direct air conditioning systems.

The Fire Department has been selected to administer the new code.

American-Standard Appoints Decker

NEW YORK CITY—Joseph J. Decker has been appointed president of the Air Conditioning Div. of American-Standard, Joseph A. Grazier, president of the corporation, announced recently.

J. J. Decker

Decker has been serving as acting president of the division since July 1, 1957. Before that, he was assistant to the president of the corporation.

The Air Conditioning Div. produces air heating and cooling equipment for residential and commercial use.

BEHIND PAGE ONE . . .

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Air Force Orders 1,500 Heat Pumps For Bases In Mississippi, Florida

BLOOMFIELD, N. J. — The General Electric Air Conditioning Div. within the last few months has received two major orders from the U. S. Air Force for more than 1,500 "Weathertron" heat pumps to be installed for important enlisted and officer personnel at its bases at Columbus, Miss., and Cocoa, Fla., according to H. M. Brundage, general manager of the Weathertron Dept.

Year-round air conditioning is beneficial to the health and welfare of U. S. Air Force personnel who must be on the alert as members of the Strategic Air Command or who work at the all-important missile center at Cape Canaveral, it was pointed out.

When temperatures are high and noise at the base necessitates service families keeping their windows shut, Brundage stated that Air Force personnel tend to look upon summer cooling as a necessary way of life. When air cooling is not provided, they are inclined privately to procure their own units.

Realizing that air conditioning under these conditions is likely to take place, authorities feel that appreciable savings to the U. S. taxpayer can be made by planning year-round heating and cooling initially when the homes are built, allowing for the proper electrical wiring and thus lower cost, he said. Incidentally, expenses of transferring privately owned air conditioners with personnel is avoided, Brundage added.

"As a result of these economies, U. S. Air Force authorities have requested and received approval for year-round climate control in the structures on many of its bases that are located throughout the south and southwest," the announcement said. "Since no combustible fuel is used, all-electric heat pumps make for increased safety and cleanliness which reduce the cost of upkeep and maintenance.

"The Services, in general, have shown great interest in the use of air conditioning the year-round for its strategic facilities and are specifying air conditioning for its personnel's living quarters at a number of its installations where heat pumps are currently being installed."

Heat pump air conditioning has been increasingly competitive with the conventional forms of heating and cooling, according to Brundage. Recent large orders in the industry give positive indication that heat pumps are reaching the mass residential market, he asserted.

This major development for the industry, he said, can be likened to the point of growth that the refrigerator had reached, just as it began to be mass produced.

For Your Reprint Copy

"Emergency Diagnosis, Repair of Hermetic Unit Electric Components," by John L. Zant, mail this ad with your name and address to: Air Conditioning & Refrigeration News, 450 W. Fort, Detroit 26, Mich.
Only 25¢ each.

Dunham-Bush Pays

WEST HARTFORD, Conn.—The board of directors of Dunham-Bush, Inc. recently declared the following dividends:

Common stock—15¢ per share, payable Dec. 13 to stockholders of record as of Nov. 29; 5% cumulative preferred stock—$1.25 per share, also payable Dec. 13 to stockholders of record as of Nov. 29.

Frantz To Make Motors, Castings

CLEVELAND — Organization of Frantz Electric Industries, Inc. to make all types of fractional horsepower motors and do custom die-casting has been announced here by C. G. Frantz, founder and former president of Apex Electrical Mfg. Co., chairman.

Joseph C. Frantz will serve as president of the new firm, established by members of the Frantz family and close associates who were identified with Apex prior to its merger with White Sewing Machine Corp. last year.

For an undisclosed sum, the new company purchased the Apex Motor & Die-casting Div. of White and will begin manufacturing operations immediately, it was noted.

C. G. Frantz is president and chief executive officer of the J. H. Connor & Son, Ltd., of Ottawa, Ont., Can., laundry equipment producing firm in which the Frantz family acquired control last March.

WEDGE UNIT
4 models
1,000 to 6,000
BTU'S Per Hour
CUB CURVETTE
3 models
800 to 4,000
BTU'S Per Hour
COOLMASTER
14 models
2,500 to 160,000
BTU'S Per Hour
AIR CONDITIONING
UNIT
3 to 10 Ton
UNICON for Unlimited Tonnage; any size compressor can use this remote air-cooled condenser. Minimum head pressure maintained by patented Winterstat.
COIL AND BAFFLES
15 Stock Sizes
THERMOBANK automatic re-evaporator hot gas defrost systems. There is a THERMOBANK for every application from 36° to minus 75°.
LARGE CURVETTE
7 models
3,500 to 30,000
BTU'S Per Hour
KRAMER
PRODUCTS
Have earned an unsurpassed reputation for leadership and dependability that makes it easy for wholesalers and contractors to grow and prosper.
Designed and engineered to the highest standards, users of KRAMER products stay sold. Pictured are a few of the many KRAMER products—each a standard of the industry.
KRAMER TRENTON CO. • Trenton 5, N.J.
44 YEARS OF CONTINUOUS ACHIEVEMENT IN HEAT TRANSFER

Airtemp Sets Up Branch In Detroit

DETROIT—The Airtemp Div. of Chrysler Corp. recently announced the opening of a new Detroit factory branch.

Located at 15501 Woodrow Wilson St., the branch will operate as a wholesale outlet for Airtemp's complete line of residential and commercial air conditioning products.

Milton P. Veith, who has headed the company's sales activities in the Detroit area for the past three years, has been named manager of the new branch.

J. V. Browne, Jr., has been named supervisor of sales.

Staffed by factory-trained technical and service personnel, the branch will offer Detroit-area authorized Airtemp dealers and contractors complete air conditioning engineering services and factory training.

"At our new branch site, which has 20,000 sq. ft. of warehouse space, complete stocks of commercial and residential air conditioning products will be maintained at all times," Veith said. "Parts and air conditioning supplies will be stocked and available for immediate delivery."

RACCA-N. J. To Honor New Officers Jan. 11

NUTLEY, N. J. — Refrigeration & Air Conditioning Contractors Association of New Jersey, Inc. has scheduled a reception Jan. 11 (Charter Day) for the Military Park hotel, Newark, to honor new officers who take over Jan. 1.

Elected at the annual meeting Nov. 24 were Ingvar Monsen, head of Monsen Refrigeration Corp., Bloomfield, as president, Saul Marder of E. Orange as vice president, Bernard J. Hassan of Hassan Bros., Inc., Bellville, secretary-treasurer, and William J. Capow, president of Cleworth Air Conditioning Co., Elizabeth, sergeant-at-arms.

Composed of 41 contractors in the state, RACCA-NJ is celebrating its 10th chartered year.

For more information about products advertised on this page use Information Center, page 16.

THE SWITCH IS ON!

Nationwide, installing contractors are discovering pay dirt in the Westinghouse Air Conditioning powerhouse sales plan.

Now, Westinghouse offers a potent three-pronged sales program that brings in sales profit for installing contractors. Here's what it does . . .

1. Makes people in your community want central air conditioning by telling them why they should want it.

2. Finds qualified prospects in *your* local market area.

3. Gives you proven tools to quickly convert these prospects into profitable sales.

The program is working now—even before the season. Here's what's happening . . .

Mr. Robert Hopkins, President, Oil Heat and Engineering, Inc., W. Hartford, Conn., says, "We switched to Westinghouse because they give us the two things we want most: a broad, top quality line that we can easily engineer to the job; a nationally known brand name. And now, Westinghouse has added extra sales power with a potent advertising and promotion program for 1958."

Mr. Ray Laferriere, Vice President, Henson Robinson Co., Springfield, Ill., says "Westinghouse gives us the kind of equipment we can install and forget . . . without costly service problems. Now, we're ready to really break into this residential air conditioning market. With Westinghouse we have a top quality product backed by a power-primed sales program."

J-80555

BETTER CHECK

Some areas still have openings for aggressive contractors. Call any of these *seven men of action* for details.

Jim Reynolds Pittsburgh, Pa. EXpress 1-2800	**Walt Hunken** Staunton, Va. STaunton 6-0711	**Bob Haubold** Dallas, Texas RIverside 1-5109	
Milt Bevington Atlanta, Ga. TRinity 4-1641	**Tom Mullen** Chicago, Ill. WHitehall 4-3860	**Al McDonald** St. Louis, Mo. GArfield 1-6911	**Bill Constance** Los Angeles, Calif. RAymond 3-9071

IN AIR CONDITIONING, THE SWITCH IS TO

Westinghouse

Westinghouse Electric Corporation • Air Conditioning Division • Staunton, Virginia

For more information about products advertised on this page use Information Center, page 16.

G-E Laboratory Device, 'Thermionic' Unit, Converts Heat Into Electrical Energy by 'Boiling Out' Electrons from Hot Metal

SCHENECTADY, N. Y.—Invention of a "thermionic converter" to convert heat energy directly into electrical energy was announced recently by the General Electric Research Laboratory here.

Dr. Volney C. Wilson invented the electronic device that takes advantage of the fact that electrons can be "boiled out" of a hot metal surface and used to produce an electric current directly.

Experimental converters already have changed more than 8% of applied heat energy into electric power, according to Dr. Guy Suits, G-E vice president and director of research. He expressed hope that this may ultimately be raised to 30%.

Dr. Wilson explained that the thermionic converter essentially smooths the path of electrons from a hot electrode to a cooler one and removes barriers which in the past have absorbed the energy before it could do useful work in an electric circuit.

Emphasizing that the thermionic converter is strictly a laboratory device and not a commercial product yet, Dr. Suits declared, "Dr. Wilson's work has opened the door to new understanding of how electricity can be generated directly from heat without using machines that have moving parts."

Dr. Suits pointed out that General Electric is investigating several approaches to the problem of converting heat directly into electricity.

One is a semiconductor device corresponding to the thermionic converter. This is a thermojunction, which, upon heating, will produce a flow of current and power in an external circuit. When the current flows in one direction, it produces heat. When the current flows in the opposite direction it produces cold.

The latter case is the electronic refrigerator, which is under continuing study, Dr. Suits said.

Heads Norge Sales Institute

CHICAGO—Operations of the Norge Sales Institute, the Norge sales training and product education department, will be directed by Gordon G. Hurt, national merchandising manager.

Jack E. Shepman is product education manager.

N.Y. State Law Bars Permanent Metal Guards Outside Window

NEW YORK CITY—Permanent metal guards installed outside windows here are a violation of state law, it was learned recently. Apartment house tenants are being forced to remove or alter them.

However, guards that can be easily taken off and put on again are permitted.

This amendment to the State Industrial Code also applies in some cases to grilles and air conditioners, a state official said.

Declares Dividend

COLUMBUS, Ohio—Directors of Ranco Inc. recently declared a quarterly dividend of 30 cents per common share, payable Dec. 27 to stockholders of record Dec. 10.

The date for the annual meeting has been fixed for Jan. 28 in the Deshler-Hilton hotel.

McMichael Is UsAirco General Sales Manager

PHILADELPHIA — David E. Feinberg, vice president of United States Air Conditioning Corp., recently announced the appointment of William C. McMichael as general sales manager.

W. McMichael

McMichael then announced the appointment of Michael H. Pelosi, Jr. as manager of the engineering and development division.

McMichael also announced appointment of Thomas Tisdel as assistant service manager, a move up from national field service engineer.

McMichael has served the industry in sales, training, and engineering capacities for the past 16 years and most recently was manager of the Cooling Div. for Bryant Air Conditioning Corp. of Philadelphia.

Pelosi has been associated with engineering and equipment application for the past 10 years and most recently served as chief engineer at Bryant Air Conditioning Corp., Philadelphia.

Gas Refrigerator --

(Concluded from Page 1, Col. 2)

to those had with other appliance manufacturers."

But, he said, "there isn't anything of value that can be had (in the way of information) right now."

At the time, the NEWS also queried other appliance manufacturers who were also said to be talking with gas utility officials about the possibilities of producing a gas refrigerator.

Hupp 'Not Interested'

John O. Ekblom, chairman of the executive committee of Hupp Corp., asserted that Hupp is "neither interested nor making efforts to acquire plants or patents of Servel, Inc."

He added, "The Gibson Div. of Hupp has done research on gas-operated domestic refrigerators and air conditioning units over a number of years.

Gibson Holds 'Over 100 Gas Patents'

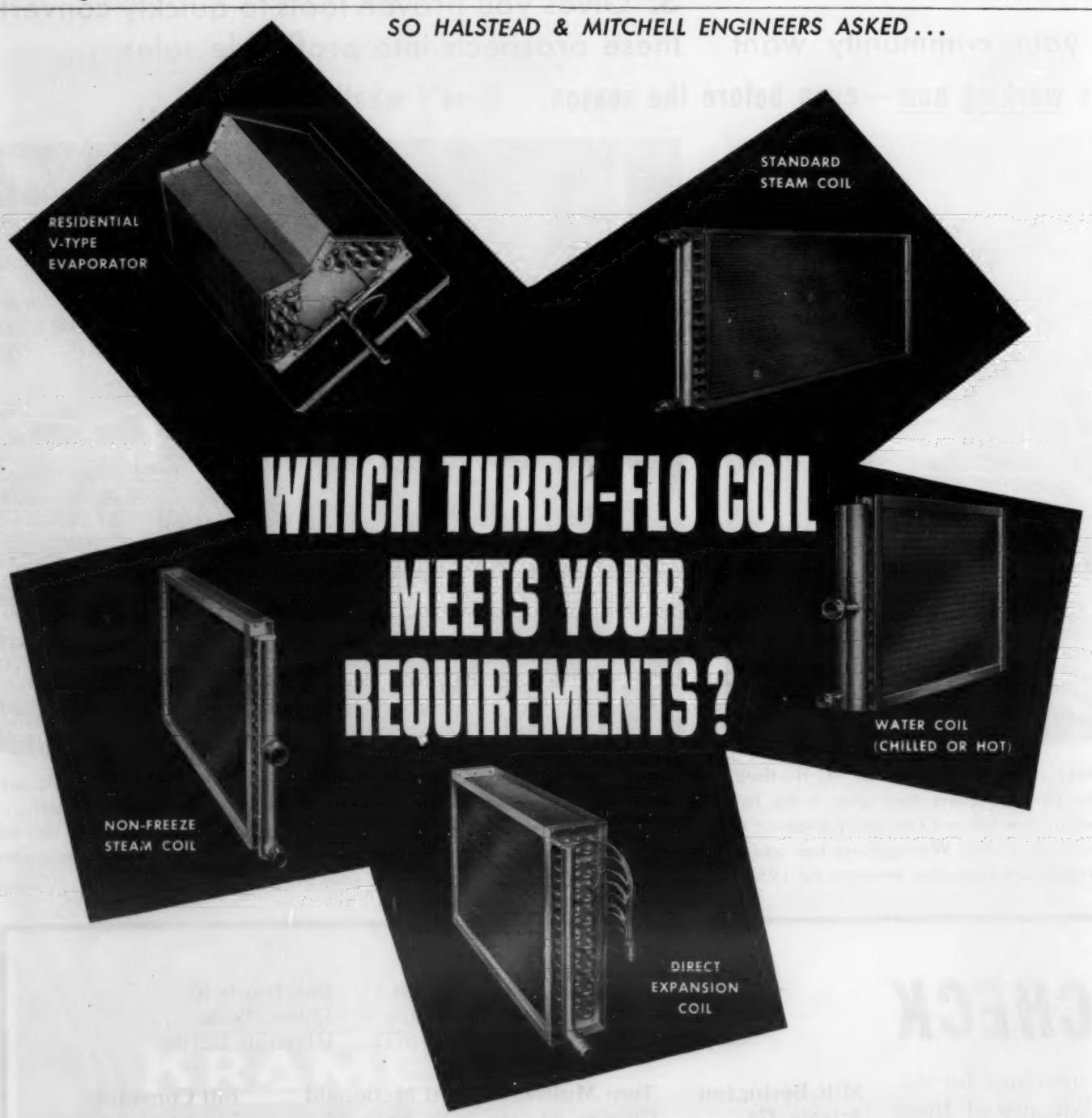
"This course of action has resulted in the Gibson ownership of over 100 different patents on gas absorption devices. This long-time activity is clear indication that Hupp's interest is not spontaneous. However, at this time, we do not intend to put into effect a specific plan of procedure."

He stated that final decisions on whether or not to produce a gas refrigerator may be influenced by discussions with utility officials but "will be more directly predicated on Hupp management being satisfied that domestic gas refrigerators can be made and sold profitably."

Philco Denies Plans

Speaking for Philco Corp., Robert M. Jones, public relations manager, denied that Philco has any plans for producing a gas refrigerator, is interested in acquiring plant or patents of Servel, Inc., or is involved in any discussions with utility officials concerning gas refrigerators.

SO HALSTEAD & MITCHELL ENGINEERS ASKED . . .



Halstead & Mitchell coils with Turbu-Flo fins are designed for rugged and long service life. And Turbu-Flo provides up to 15% more heat transfer capacity.

STEAM COILS are available in both standard and non-freeze types. WATER COILS are for use with chilled or hot water. DIRECT EXPANSION COILS are equipped with a pressure type distributor and circuited for minimum refrigerant pressure drop . . . will accommodate any make expansion valve, refrigerants 12 or 22. All coils are regularly available in from 1 to 8 rows deep, in finned heights of 12 to 36 inches, and in lengths up to 10 feet. Manifolding can be arranged for left, right or opposite-hand connections. Other sizes or special coil types can be provided to meet your specifications.

EXCLUSIVE, EFFICIENT TURBU-FLO

All coils feature the exclusive Turbu-Flo fins. Streamline design creates better air wash, lowering air film resistance and improving heat transfer; yet friction is at a minimum.

Turbu-Flo fins are made of aluminum (available in copper), mechanically bonded to seamless copper tubing.

Casings are of heavy gauge steel fully protected against corrosion or of heavy gauge aluminum. Surrounding flanges simplify ductwork installation.

Write for more specific information, delivery and prices. *Halstead & Mitchell, Bessemer Building, Pittsburgh 22, Pa.*

HM Halstead & Mitchell

For more information about products advertised on this page use Information Center, page 16.

Classes on Maintenance Scheduled by Bahnson Weeks of March 3, 10

WINSTON-SALEM, N. C.—Annual classes held for maintenance and service engineers by the Bahnson Co. are scheduled for the weeks of March 3 and 10, 1958 at the Robert E. Lee hotel here, announced Fred Boxall.

Discussions will take up a full five days. These are repeated the following week for a second group.

Program has been tentatively outlined to cover the following subjects in this order:

First day: fans, ducts, grilles, drives, distribution; air washers; heating and cooling coils, piping, accessories; rating and design of boilers; stokers and burners; boiler controls and accessories; soot and flue maintenance; water conservation and treatment.

Second day: pneumatic controls, electric controls, electronic controls, recording instruments, painting and coatings.

Third day: motor design and installation; controls, starters, fusing; electric load balance, checks and controls; preventative maintenance; industrial lighting; use and operation of electrical instruments; elevator service contracts; welding, brazing, soldering.

Fourth day: types of refrigeration systems; reciprocating and sealed units; condensers and coolers; centrifugal compressor design and service; pumps; cooling towers; refrigerants.

Fifth day: air compressors, atomizers, "humiducts," humidifiers, end collection, cleaners, good housekeeping.

McCabe-Powers Folder Salutes Servicemen

ST. LOUIS—Rising to the defense of the "U. S. Repairman," severely criticized in a feature article in the Oct. 14 issue of *Time* magazine, McCabe-Powers Auto Body Co. here has mailed 250,000 special four-page folders to repairmen throughout the country.

"The folders were prepared because we feel that *Time's* article painted a blacker-than-necessary picture of the U. S. Repairman," stated John Powers, company president.

"To be sure, there are many 'easy-going, unhurried individuals' in the repair business, and petty crooks, too, as *Time* pointed out." "But," Powers added, "the vast majority of America's repairmen are intelligent, hard-working, honest persons who deserve a pat on the back for jobs well done."

Philco Accessory Div. Names William Nagy

PHILADELPHIA — Appointment of William J. Nagy as general sales manager of Philco Corp.'s Accessory Div. was announced by R. E. Nugent, general manager.

Nagy was advertising and sales promotion manager of the division prior to his new appointment. He joined Philco in 1947.

Manufacturers and Servicemen View Lack of Communications Between Them as Big Problem

CHICAGO—In an open and frank discussion of their mutual complaints, manufacturers and servicemen learned from each other at formal and informal meetings held during the several association programs here recently.

The exchange of viewpoints took place during question and answer periods after prepared talks, during panel discussions, and in many informal conversations.

A general complaint from servicemen was that manufacturers often make changes without notifying the field that the changes have been made or explaining to them why they have been made.

One example given was the fact that motor frames are being altered so as not to be interchangeable with older models.

While admitting that closer communications would be desirable between manufacturer and servicemen, one manufacturer's spokesman pointed out that this particular change is typical of the difficultiy encountered during a period when some degree of standardization is being developed.

He recalled the days when it was impossible to replace a motor or compressor with any other make or model and pointed out that during the period of standardization, there were many complaints which are now forgotten and meaningless.

Servicemen and application engineers questioned many specific details such as location and shape of bolt holes, choice of capacitors, motor design, and compressor behavior under special conditions. In general, they felt that manufacturers are not supplying information to the field.

On the other hand, several manufacturers stated that half of the serviceman's difficulties with original equipment would be eliminated if the serviceman would bother to read the installation and operating instructions which accompany the equipment. Many of the questions and complaints they receive would be unnecessary if this were done, they pointed out.

But designs are proved in the field, the manufacturers agree, and they definitely want to hear from the servicemen. John H. Spence, Hussmann Refrigeration, Inc., referred to servicemen as "the eyes and ears of the manufacturer."

"Every manufacturer, at one time or another, has experienced an epidemic of a certain type of problem," Spence said. "Often, in cases like this, it is information from the field which first makes us aware of the particular problem.

"Frequently, too, a great part of the answer comes from the field," he said.

"Write the manufacturers whenever you encounter valid difficulties with their units or whenever you have suggestions to offer," Spence further pointed out.

Torrington Dedicates Plant

VAN NUYS, Calif.—Torrington Mfg. Co. recently dedicated its new $1 million plant for the manufacture of fans and blowers here.

Tecumseh engineering VISION

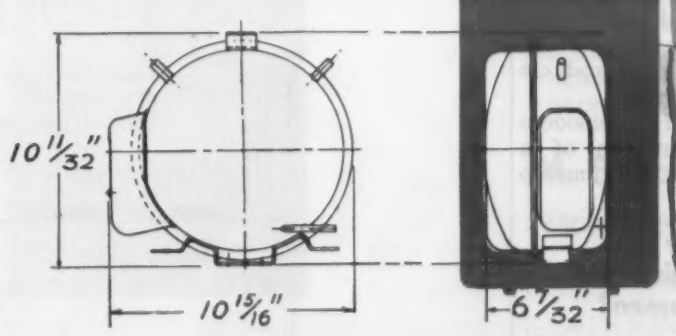
introduces the first compressor exactly suited to

Portable Air Conditioners

Now available to the industry is the first practical solution to the portable air conditioner problems of weight and size, the Tecumseh Model AR26 Pancake. This new ½ horsepower compressor weighs only 31 pounds as opposed to 52 pounds, the weight of the previous Tecumseh compressor used in this application! The space-saving advantages of Pancake construction have already proven themselves in other refrigeration applications. This extension of the pancake design to greater horsepower sizes within the same size shell guarantees production economy and the customary Tecumseh low unit price. Finally (and realistically), this new Pancake packs more capacity into its shell than any other of its size . . . 5150 BTU.* Call today to investigate the best and latest portable air conditioner compressor — the Tecumseh AR26.

½ HP Pancake Compressor
MODEL AR26

WEIGHS ONLY 31 POUNDS!



GREATEST SPACE-SAVER!

* Rating based on: 180 P.S.I.G. Head pressure
42 P.S.I.G. Suction pressure
95°F Return Gas
95°F Ambient
115°F Liquid temp.

TECUMSEH

The Leader Serving Leaders in the Air Conditioning and Refrigeration Industries

TECUMSEH PRODUCTS COMPANY

MARION, OHIO — TECUMSEH, MICHIGAN

EXPORT DEPT: P. O. Box 2280, 24530 Michigan Ave., W. Dearborn, Michigan

What Makes a GOOD Distributor?

Favorable Financial Status, Attitude, Community Relationship, Service Organization, Location, Facilities Cited by York

CHICAGO—The self-made distributor is the best answer to the shortage of skilled selling and service manpower facing the refrigeration and air conditioning industry, Austin Rising, vice president in charge of marketing for York Div. of Borg-Warner Corp. declared recently.

Addressing the National Commercial Refrigerator Sales Association at its annual convention here, Rising declared that York is seeking this type of independent distributor as sales outlet for its air conditioning and refrigeration products.

Though York has been "forced" to install factory branches in some areas where strong, independent distributors could not be found, Rising said, "we do not intend to make this our policy except when absolutely necessary.

"We will dissolve our branch operations as quickly as properly motivated independent distributors can be found in these areas," he asserted.

Speaking on behalf of Henry Haase, president of York, who was confined to his room with a throat ailment, Rising outlined the qualities York looks for in selecting a distributor.

"Certainly the financial status of a potential distributor is important," he began. "His present annual dollar volume, the amount of working capital he has available with which to grow and expand, the number of dealers he is capable of servicing and selling, his methods of financing, his credit standing, and his personal handling of his money are some of the things we consider important.

"The attitude of a distributor is another consideration. Sometimes this is the most important element.

Eagerness, Enthusiasm, Courage Are Important

"By attitude, I mean the eagerness, the enthusiasm, and the courage necessary to get a big job done. Today the forces are decidedly those of a buyer's market.

"More than ever, success depends upon determination to increase volume, thereby growing and expanding profitably. Today, aggressive and creative selling is mandatory to move products to the ultimate buyer."

Rising said York considers carefully the reputation of a distributor and his relationship in his community.

How Is Distributor Regarded by His Fellow Businessmen?

"We are interested in the role he plays in his community, his contacts, the part he takes in civic affairs, the way he is generally regarded by his fellow businessmen and fellow citizens. The length of time he has lived in his community, the extent of his territory, and his influence there are also considered."

Rising declared that York is especially interested in his service organization because "we will always expect our distributor and dealer organization to do its full part by providing well-trained people to make the proper applications and installations and to perform dependable maintenance as necessary."

Rising noted that York checks a distributor's location and warehousing facilities, for the company requires a distributor to inventory reasonable quantities of proper mixes of the firm's products.

Weak Distributors Penalize Strong Ones

As it is the distributor's responsibility to achieve maximum coverage of his territory, York looks into his manpower supply for quality and number.

"A weak distributor who fails to cover and serve his market adequately," Rising said, "may well penalize a strong distributor trying to do an effective job in another market.

"Obviously, when weak distributors fail to pull their share of the load, the tendency is to increase the load on the strong distributor. This, of course, is not good business."

Attitude Toward Promotion

Other factors checked are the distributor's attitude toward advertising and promotion, whether his sales plan is geared to his needs, and his previous experience and success in this business.

Rising told the distributors that York markets its room air conditioners through wholesale distributors who place them in the hands of appliance retailers and 26 other types of retail outlets.

Its commercial air conditioning products are marketed through wholesale channels and also through combination wholesale-retail channels according to the dictates of each market.

"Commercial air conditioning is today finding an expanding market through application of multiple packages for a myriad of business and industrial uses," he said. "This again has changed the marketing and distributing requirements."

Residential Distribution Becoming Complicated

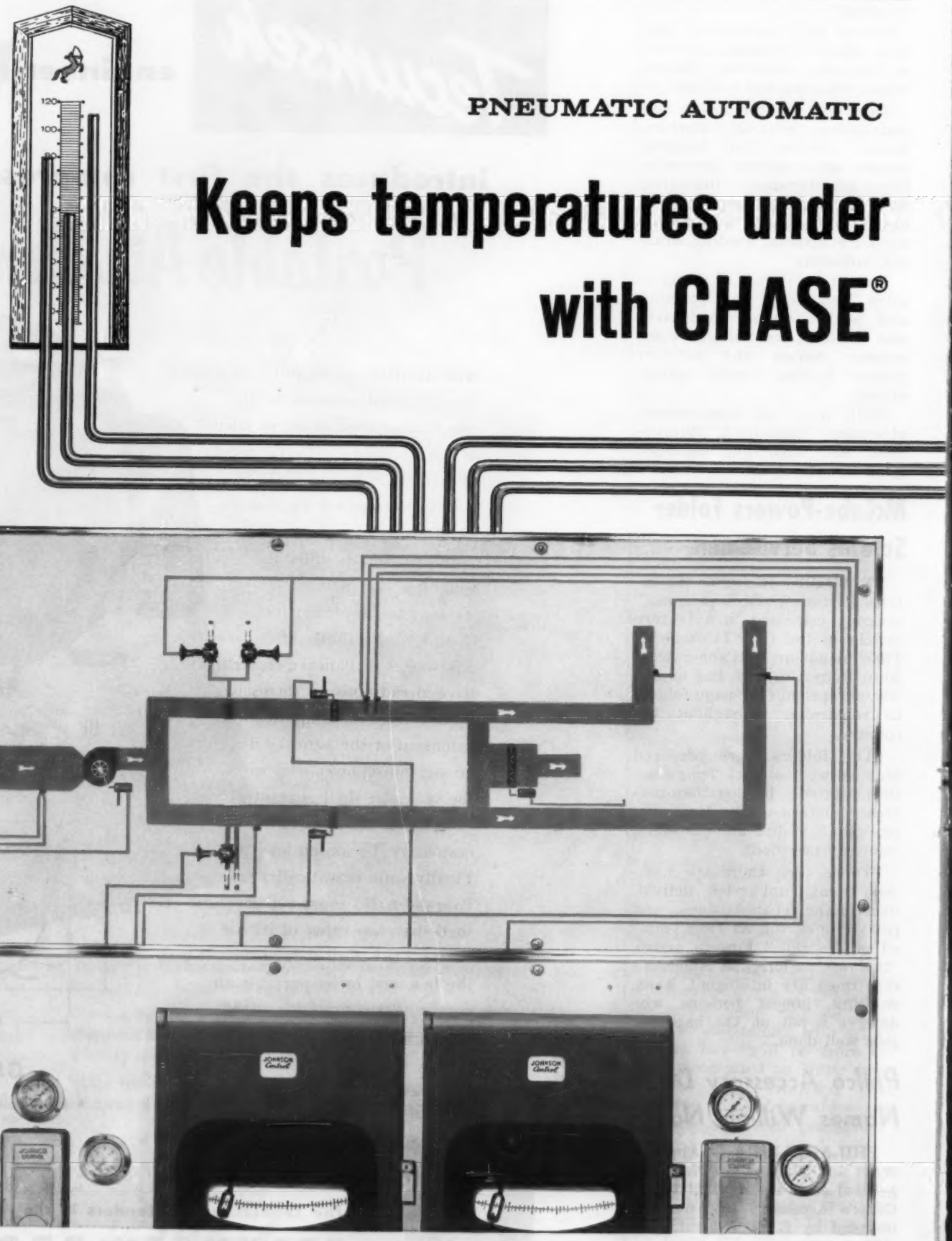
Residential heating and cooling products are sold through the same channels as commercial air conditioning, though distribution is becoming complicated by the entry of the forced warm air industry into the air conditioning field, he noted.

"Whether the residential heating and cooling trend will eventually turn into an appliance type business is yet to be determined," he asserted.

"We believe that the complexity of these products requires the skill and experience of a strong wholesaler or wholesaler-retailer in order to assure effective promotion selling and market development."

Hermetic compressors and condensing units are marketed through refrigeration wholesalers and what York calls an "R" distributor. "R" distributors are primarily retail outlets equipped to render adequate services in all phases of engineering, selling, installing, servicing, and financing of sales at the consumer level. Generally, they exist only in the more isolated areas.

Ice making equipment is sold to wholesale distributors and, in isolated areas, to "R" distributors.



PNEUMATIC AUTOMATIC

Keeps temperatures under with CHASE®

Typical pneumatic control panel has graphic illustration of Chase Copper Tube. Shows intricate pattern of tube controlling individual systems, of which there are thirty throughout the building from basement to penthouse.

For more information about products advertised on this page use Information Center, page 16.

Servicing Air Conditioners Costs More Than Furnaces, Heating Wholesalers Told

CHICAGO — Heating wholesalers who expect to be active in air conditioning will have to recognize servicing these units will cost more than they've been accustomed to with furnaces, it was brought out at the 11th annual convention of National Heating & Airconditioning Wholesalers, Inc. held here recently.

"Air conditioning service costs run 10 times heating service costs, I've been told," declared C. Blaine Lytle of Air Con, Inc., Detroit, participating in a "workshop panel" on wholesaler budgets for sales promotion.

"Service costs run 2½% of sales on air conditioning, compared with .25% on heating, I've been told by other wholesalers with much more experience in air conditioning," Lytle said.

"We don't think the small rural area dealer who sells only three or four air conditioning units a year will ever be an expert on service," suggested A. E. Bennett of Plumb Supply-Omaha, Inc., who explained that his firm maintains a fully equipped service truck at the disposal of small dealers.

A different approach is used by Lytle's firm, which arranges for such service with an independent serviceman.

"In general, you'll need one good serviceman for each $400,000 worth of equipment you sell," Lytle said, adding that "manufacturers will share more of these costs than you might realize."

Continuing on the service problem, Bennett explained that "we're a specialty house, not a complete house, handling only three lines of equipment. If you're going to be in business handling specialty lines, you've got to stock special items for these lines such as special contacts, capacitors, controls, etc."

Discussing more conventional aspects of sales promotion, Tommy Thompson of the Thompson Co., Atlanta, panel moderator, reminded wholesalers that "a slight drop in sales often cuts out profit, so sales promotion is necessary.

"Service, quality, and price don't make sales; they're what we give after we get the order," he commented.

Gives Best Dealers Most Promotional Help

How much promotional help the G. Mitchell & Co., Ltd. of Montreal gives dealers depends somewhat on how good the dealer is, it was explained by George Mitchell, who revealed his firm helps its best dealers as much as 1% to 2% of their total sales.

"I'm a strong believer in not charging the dealer for literature, and we usually stand part of the mailing cost, too," Mitchell said. "We're not much interested, though, in telephone directory advertising because there's too much high pressure selling involved."

Another aspect of sales promotion—having a salesman on hand at model homes over the weekend—is frowned upon by Mitchell since "we can't afford to do it," but another wholesaler commenting from the floor pointed out that his firm does work with model home builders in helping promote new items such as the heat pump.

"Too few of us actually analyze our advertising campaigns," critized another panelist, Robert J. Schroeder of New Bremen Supply Co., New Bremen, Ohio.

"Advertising budgets should be spread over several 'shots' rather than concentrated on one all-out 'shot,'" he suggested.

Wholesalers' advertising should be tied in with national campaigns, Schoeder believes, and "you should decide what group you're going after and what is the best media to reach that group.

"In preparing advertising copy avoid hackneyed phrases and remember that the customer is only interested in what the product or service will do for him," Schroeder advised. "And don't forget to tell him where to buy it."

Rather than setting up a firm over-all advertising budget for all products, Schroeder thinks this problem should be approached on the basis of the benefit to be obtained from the particular product involved, he said.

Who Should Prepare Engineering Layouts?

Still another aspect of sales promotion—preparing of engineering layouts by the wholesaler for the dealer—was aired at the panel discussion by W. A. Tholen of General Heating & Cooling Co., Inc., Kansas City, Mo., who raised several questions:

Should the wholesaler do engineering and prepare layouts for dealers? Should he do it free of charge? If he charges, how much should he charge? How will mechanical engineers react to this because you'll be encroaching on their function?

"We have been training dealers to do these things themselves," Tholen revealed. "We conduct training schools for this purpose."

Comments from the floor, however, indicated that quite a number of wholesalers do perform this engineering function for dealers—at no charge—but often just provide a rough layout of the job until a firm order has been actually received. It was also pointed out in some states the wholesaler would have to have a professional licensed engineer on his staff in order to charge for such layouts.

M. E. Bailey Elected Vice President of American Ice Machine

MINNEAPOLIS—Jay R. Resch, president of American Automatic Ice Machine Co., a subsidiary of McQuay, Inc. here, announced that American's board of directors elected M. E. Bailey as a vice president of the company.

Bailey has been with McQuay and American Automatic Ice Machine since 1943. Since 1950 he has been associated with the Faribault plant, operating as assistant general manager and assisting in the sales of the automatic ice maker.

CONTROL SYSTEM

control in Seagram Building copper tube!

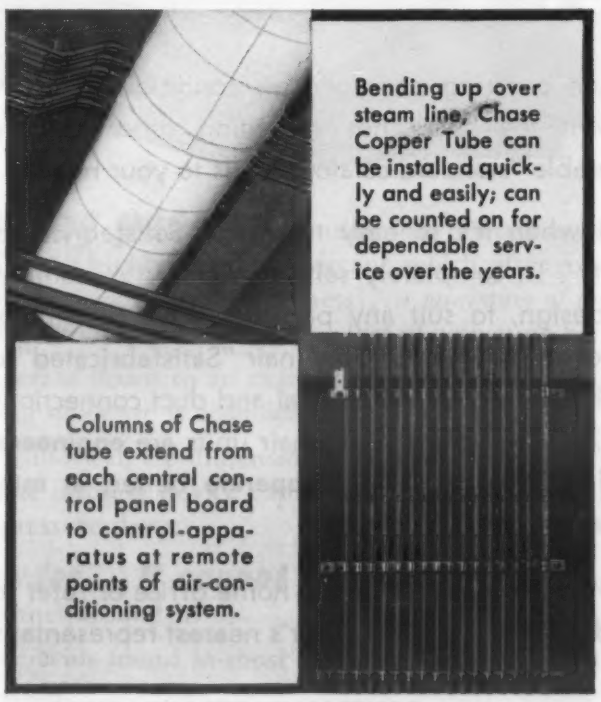
BRONZE SKYSCRAPER HAS 30 MILES OF CHASE COPPER TUBE

3,000 control valves...1,000 thermostats...dozens of panel boards...all inter-connected by a 30-mile network of Chase Copper Tube! That's what it takes to control the temperature, flow and pressure of air, steam and water for the complete air-conditioning system in the monumental new bronze building at 375 Park Avenue.

Only the best would do for New York's most modern, most magnificent skyscraper. So for the installation of its Automatic Temperature and Humidity Control System, a completely pneumatic control system, utilizing Chase Copper Tube, was used. Based on past performance, Chase Copper Tube was chosen for its durability, low cost and attractive appearance.

Quick and easy to install, Chase Copper Tube saves both time and money...makes a virtually "permanent" installation, operating always at peak efficiency. In addition, Chase offers prompt, completely reliable delivery of desired quantities—a vital factor where storage is at a premium and delay costly.

For time-tested quality plus the service you require, plan your modern control installation with Chase Copper Tube!


Bending up over steam line, Chase Copper Tube can be installed quickly and easily; can be counted on for dependable service over the years.
Columns of Chase tube extend from each central control panel board to control-apparatus at remote points of air-conditioning system.

Chase BRASS & COPPER CO.
WATERBURY 20, CONNECTICUT
SUBSIDIARY OF KENNECOTT COPPER CORPORATION

The Nation's Headquarters for Brass, Copper and Stainless Steel

Atlanta Baltimore Boston Charlotte Chicago Cincinnati Cleveland Dallas Denver Detroit Grand Rapids Houston Indianapolis Kansas City, Mo. Los Angeles Milwaukee Minneapolis Newark New Orleans New York (Maspeth, L.I.) Philadelphia Pittsburgh Providence Rochester St. Louis San Francisco Seattle Waterbury

For more information about products advertised on this page use Information Center, page 16.

Air Distribution Requirements In Year-Round Air Conditioning

5. Fundamentals of Conditioned Air (Cont.)

By Frank D. Klein, Chief Engineer, Governair Corp.

Frank Klein has been associated with the air conditioning and refrigeration industry for over 20 years. An engineering graduate of the University of Michigan, he has held executive positions with a number of leading manufacturers, and has served as a consultant to both manufacturing and distributing firms, in the heating as well as the cooling field.

The point was made previously that as air conditioning engineers we are constantly involved with, among other things, condensation and vaporization. The effect of these specifically increases the volume of air atmospheres due to the change that takes place in the transformation of the components such as water from liquid to gas. Conversely they decrease the volume of air atmospheres in the process of reversing the order of change from gas to liquid.

When in one or the other process one pound of vapor is condensed or vaporized it either accepts or rejects the amount of heat in B.t.u.'s equivalent to the energy involved in the process.

For example, when one pound of water vapor is condensed by either an increase in pressure or a decrease in temperature, or in some instances both of these, it will reject the heat equivalent to its latent heat of vaporization.

Throughout our investigations and discussions thus far we have continually encountered the term "water vapor." Which, of course, concerns the amount of water in the air atmospheres involved. In the heating and cooling cycles we are of course concerned with the control of heat. We have seen both the effects as well as investigated the cause of both sensible and latent heats and have found these directly proportionate to water vapor in air atmospheres.

Thus we are specifically concerned with moisture in the air to be conditioned and that in the conditioned air. Therefore, we are and must be concerned with saturated air and saturated vapors, for each have to do with humidity, which as we know it, is a quantitative expression of water vapor in an air atmosphere, usually expressed in percentages.

When a vapor can no longer reject or have heat extracted from it, or be compressed at constant temperatures without condensation, it is considered to be a *saturated vapor*.

When an air atmosphere on a predetermined unit basis of weight contains all of the water vapor it can absorb at any given temperature, which remains constant, or pressure which remains constant, or both, that unit of air atmosphere is considered to be saturated.

Humidity Explained

The definitions and explanations on vaporization and condensation lead up to a discussion on Humidity, for Humidity is derived from the water vapor present in an air atmosphere. Most of us, while completely familiar with the term Humidity, are more familiar with the term *relative humidity*.

Relative Humidity is usually expressed in or on a percentage basis as the ratio of a unit weight of water vapor to the unit weight of dry saturated vapor, with both observed at the same given temperature. Psychrometrically the absolute value is the weight of water vapor per pound, or any unit volume of air atmosphere in grains per cubic feet.

Percentage Humidity can be resolved by dividing the unit weight of water vapor mixed with a unit weight of dry air, by the maximum unit weight of water vapor that can be mixed with the same weight of dry air, at the same given temperature, without causing condensation of the water vapor from the air atmosphere mixture.

To understand Humidity and its expression in units, we have to understand the *temperature of condensation.* In the case of water vapor, condensation from air is that point known as the *dewpoint temperature.*

Visualize Water Vapor as Steam

Probably the most simple illustration of water vapor and a corresponding condensing temperature is to visualize water vapor as steam. The condensing temperature of steam at 0.2 p.s.i. absolute pressure is 53° F. If steam is raised to 80° F. and the pressure remains the same and constant, it is superheated. Reduce the temperature, and once again let the pressure remain constant, below 53° F. and it will condense into water.

For example, introduce a known quantity of steam into an otherwise closed vessel. When the known amount has been introduced, close off the introduction of any more steam, then lower the shell temperature of the vessel by running water at 46° F. over its surface. The steam will start to condense into water, but the pressure will remain constant.

However, as the condensation continues the pressure in turn

(Continued on next page)

WHY SUFFER FROM
"STANDARD CATALOG UNIT"
HEADACHES?

"SATISFABRICATED" AIR CONDITIONING UNITS
BY GOVERNAIR
WILL FIT YOUR JOB!

When ordering packaged air conditioners, why should you inherit the headaches of fitting other manufacturers' unalterable "standard catalog" units to your needs?

Not when it's so easy to order "Satisfabricated" Governair units . . . completely self contained . . . completely flexible in design, to suit any particular load conditions or unusual space requirements. Governair "Satisfabricated" units operate with simple water, electrical and duct connections. Important, too, is the fact that Governair units are **engineered** better . . . and **built** better . . . to **operate** better, at minimum maintenance cost.

For more details, write the home office or refer to your classified directory for Governair's nearest representative.

GOVERNAIR CORPORATION
4840 NORTH SEWELL OKLAHOMA CITY, OKLAHOMA

GOVERNAIR

Redmond
MICROMOTORS
One of largest stocks in the world!
FACTORY DISTRIBUTORS
MARVIN L. "FERGIE" FERGESTAD
CYCLO-FREEZE CORP.
6318 Cambridge, Mpls. 16, Minn.
West 9-6794

Trying to find the right man for a hard-to-fill vacancy—the NEWS' Classified Ads are read by your man.
Place your ad today!

For more information about products advertised on this page use Information Center, page 16.

Air Distribution Requirements--

(Continued from preceding page) will fall, this occurs because of the difference in unit volume occupied by steam and water; the water will occupy less space than when it was a steam vapor. Now as the pressure falls the condensing temperature of the steam will also fall.

In this we have an exact process in duplication of what happens in an atmosphere containing water vapor, because the water vapor in an air atmosphere is really in a superheated state at low pressures.

Once the water vapor in the air atmosphere cools to the condensing temperature corresponding to its pressure at that temperature, any further cooling brings about a lowering of the temperature of condensation. During the complete cycle of condensation of the water vapor to water, both pressure and condensing temperature of the water vapor decline.

Therefore more correctly the dewpoint temperature is that temperature at which water vapor in an air atmosphere condenses to a liquid.

Saturated Air Defined

A reference has been made to "Saturated Air." We know now that this term has to do with the quantity of moisture on a unit basis that a given amount of dry air will absorb. Furthermore, that any quantity of water vapor in an air atmosphere producing this result and which has been cooled below the dewpoint is considered to be saturated air.

However, the quantity of water vapor is not the only influencing factor. We know that if the dewpoint temperature is not reached, for that quantity of water vapor involved, there will be no condensation.

It is at this point that the volume of each step into the picture, for if this condition prevails, as the temperature is lowered, but yet above the dewpoint, each will contract in direct proportion to each other. Thus changes in temperature of an air atmosphere containing certain quantities of water vapor will not change the quantity of the water vapor as long as the atmosphere remains above the dewpoint.

Conversely, if the same air atmosphere is subjected to temperatures above this dewpoint temperature, the term describing its condition is said to be unsaturated. Thus the quantity of water vapor, or moisture content of the air atmosphere above the dewpoint temperature corresponds to the dewpoint temperature.

On the basis of the above relationships information in the form of tables has been published in which it is possible to read the weight of water vapor that can be mixed with a specific quantity of dry air at any given dewpoint. This information is generally called "Moisture Content Tables." More proper is the use of the term "Degree of Saturation."

Such a group of tables, evolved from a cooperative project sponsored by the American Society of Heating & Air Conditioning Engineers with the Towne Scientific School of the University of Pennsylvania, can be found in the ASH&AE Guide of 1957. Called the "Thermodynamic Properties of Moist Air (compiled by John A. Goff and S. Gratch) at Standard Barometric Pressure."

When referring to these tables the term "Entropy" might be unknown. Its definition is: a mathematical factor, which is a measure of the unavailable energy in a thermodynamic system.

A typical abstract from these tables reveals an example as follows:

a. Observed Absolute Temperature (t) ....100°F.

b. Humidity Ratio

($W_s \times 10^2$)	4.319

c. Volume cu ft/lb Dry Air

(Va)	14.106
(Vas)	0.975
(Vs)	15.081

d. Enthalpy Btu/lb Dry Air

(Ha)	24.029
(Has)	47.70
(Hs)	71.73

e. Entropy Btu/°F/lb Dry Air

(Sa)	0.04729
(Sas)	0.09016
(Ss)	0.13745

f. Condensed Water

Enthalpy Btu/lb (Hw)	68.06
Entropy Btu/lb/°F (Sw)	0.1296
Vapor Press Hg in (Ps)	1.9333

The values in parenthesis above are:

(t) as t(F)—Fahrenheit temperature in absolute T by: T t + 459.67.

(Va)—Specific volume of dry air in cu. ft. per lb.

(Vas)—Is equivalent to Vs — Va; the difference between the volume of moist air at saturation per pound of dry air, and the specific volume of dry air itself in cu. ft. per lb. of dry air.

(Vs)—Is equivalent to the specific volume of moist air at saturation per pound of dry air, cu. ft. per lb. of dry air.

(Ws)—Is equivalent to the Humidity Ratio at saturation.

(Ha)—Is the specific enthalpy of dry air, B.t.u. per lb. of dry air.

(Has)—Is equivalent to Hs — Ha; the difference between the enthalpy of moist air at saturation per pound of dry air, and the specific enthalpy of the dry air itself, B.t.u. per lb. of dry air.

(Hs)—Equals the enthalpy of moist air at saturation per pound of dry air, B.t.u. per lb. of dry air.

(Sa)—Is the specific Entropy of dry air, B.t.u. per lb. per degree F.

(Sas)—Equals Sa-Ss, which is the difference between Entropy of moist air at saturation, per pound of dry air and the specific entropy of the dry air itself, B.t.u. per lb. of dry air, degree F.

(Ss)—Is the Entropy of moist air at saturation per pound of dry air, B.t.u. per lb. of dry air, degree F.

(Hw)—Is the specific Enthalpy of condensed water (liquid or solid) at standard atmospheric pressure, B.t.u. per lb. of water.

(Sw)—Is the specific Entropy of condensed water (liquid or solid) at standard atmospheric pressure, B.t.u. per lb. of water.

(Ps)—Equals the saturation pressure of pure water vapor, lbs. per sq. in., absolute pressure.

It should be noted that in these tables:

(1) The humidity ratio W at given values of temperature and pressure can have any value from zero to (Ws).

(2) Under (Ha) the energy unit B.t.u. is related to the foot-pound by definition as in: 1 B.t.u. equals 778.3 Ft.-lbs.

(3) In (Sa) the specific Entropy of dry air is assigned the value zero at 0° F. and at standard atmospheric pressure.

(4) The specific enthalpy of liquid water, condensed (or solid) is assigned a value of zero at 32° F. saturation pressure (0.088586 p.s.i.a.), in (Hw).

(5) The specific entropy of liquid water, condensed (or solid), is also assigned the value of zero at 32° F. saturation pressure (0.88586 p.s.i.a.) in (Sw).

The use of these tables in connection with air psychrometry is invaluable.

(To Be Continued)

SEND FOR REPRINTS

Product Knowledge, Protective Maintenance, Trouble-Shooting, Adjustment, Repair of Electric Motors.

Only 40¢ each.

For your copy, clip this ad and mail with name and address to: Air Conditioning & Refrigeration News, 450 W. Fort, Detroit 26, Mich.

And for 9 long years... Sporlan has offered a core that is molded of minute particles of a highly efficient desiccant, which, after complete assembly, is activated to the highest degree of dryness... *a minimum of four hours at over 500° F.,* then immediately sealed against any loss of activation before installation!

It dries the refrigerant down to an extremely low end point... a point so low that any remaining moisture is absolutely harmless!

Its tremendous cylindrical, tri-dimensional, *porous filtering area* unquestionably offers the only true filtering device capable of filtering out foreign matter with negligible pressure drop.

It cannot powder... It cannot pack... and the refrigerant cannot by-pass it or channel around it.

Harmful corrosive acids found in most systems today are adsorbed and retained within the core itself.

So... as Engineers everywhere agree, if you want perfectly clean, perfectly dry refrigeration and air conditioning systems buy Sporlan Catch-Alls, the Perfect Filter-Drier with the famous Molded Porous Core!

Ask your wholesaler, or write direct for the new Sporlan Catch-All Bulletin 40-10 today! You'll find Catch-Alls available in progressive sizes from 3 to 400 cu. in. in flare or sweat connections.

SPORLAN VALVE COMPANY
7525 SUSSEX AVENUE
ST. LOUIS 17, MISSOURI

EXPORT DEPT. AD. AURIEMA, 85 BROAD STREET, NEW YORK 4, N. Y.

New Freight Classification, Completion of Brochure On Financing Are Joint NCRSA-CRMA Accomplishments

CHICAGO — A new freight classification and completion of a brochure on financing were two accomplishments recently announced by the joint committee of commercial refrigeration manufacturers and distributors.

The announcement was made by Harry Corbin, sales vice president of C. V. Hill & Co., Inc., at the 11th annual convention of the National Commercial Refrigerator Sales Association here.

Corbin gave no details on the new freight classification, but said more information on this subject would be released in the near future.

The brochure on financing, prepared by A. B. Biddle, executive vice president of Hussmann Refrigeration, Inc., now goes before a selected special committee for final approval, Corbin said.

Corbin mentioned four questions the joint NCRSA-CRMA committee discussed at its fourth and most recent meeting. They are:

What are the basic requirements of a commercial refrigeration distributor?

How can the value of the functions and services of the distributors be more forcefully called to the attention of all customers and supply sources?

How can we work together to develop more qualified distributors?

Are "tight money" and high interest rates retarding sales?

"You can readily see that the questions discussed do not lead to an immediate and final answer," Corbin said.

He explained that the "committee acts as a sounding board for the consideration of all matters or problems affecting the interests of either or both groups. It makes it possible for each group to look at our industry from two sides, to work as a team, and to erase false conceptions before any damage is done."

W. F. Beal Store Cooled

NEW ORLEANS—Featuring year-round air conditioning, the W. F. Beall Corp. has opened its first department store here in the new M. A. Green Shopping Center. The firm now has 15 stores in Louisiana.

EIGHT-DOOR REACH-IN cuts frozen food handling costs at Baur's Cherry Creek Restaurant.

8-Door Reach-In Slashes Frozen Food Handling Cost by 18% for Restaurant

DENVER — Installing an eight-door, reach-in freezer has solved many frozen foods handling problems for Baur's Cherry Creek Restaurant here.

Costs average around 18% less than in the past, according to the Denver restaurant manager.

The unit is located at the right rear of the kitchen along the wall convenient to the salad preparation area.

Custom built of stainless steel throughout, the Traulson box accommodates the same inventory of frozen foods as did a walk-in box formerly used for the purpose. But it operates far more economically, inasmuch as employes need only to open one section at a time to extract desired frozen foods instead of swinging wide a single huge door such as was the case with the walk-in freezer, it was pointed out.

A -10° temperature can be maintained throughout the reach-in box at a much lower over-all cost, according to David S. Walker, general manager.

Along with installation of the new refrigerator, a policy whereby the supervisor on each shift who stocks the box leaves an identifying label on the front, also saves time and refrigeration loss.

As the reach-in is stocked, the supervisor who is filling it uses a chinagraph pencil and a piece of white paper, scotched-taped to the box front, to identify the inventory completely.

Consequently, during the next shift, when a chef, for example, wants scallops and boned trout, he can quickly identify which of the reach-in sections contain the items and obtain them swiftly without the necessity of opening several doors.

Prediction

Vendor Sales May Top $4 Billion In 1965

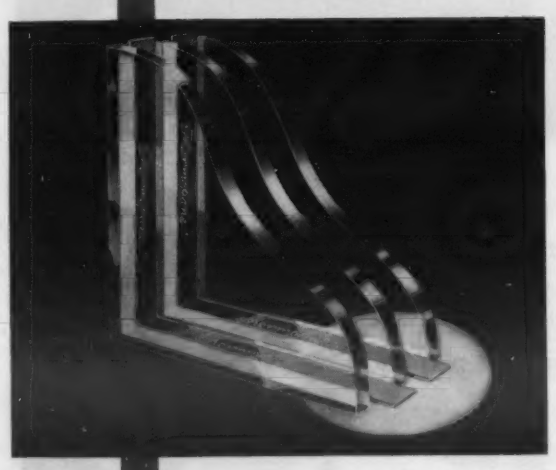
CHICAGO — Predicting that vending machine sales this year will top $2 billion, William S. Fishman, president of National Automatic Merchandising Association, said by 1965 estimated industry sales will run between $4 and $5 billion.

Bulk of sales from the 3.5 million vendors now in operation comes from cigarettes with 41% of the dollar volume, Fishman added. Bottled and cup soft drinks represent 27%; candy, gum, and cookies 13%; and coffee and hot drinks 7%. The remaining 12% is split among several other items.

In 1925 vending machine sales totaled $30 million and amounted to less than $1 billion in 1949.

Keep your frozen food "in the clear" with
THERMOPANE® INSULATING GLASS!

Customers see their favorite brands faster
(and from farther away)...
and this glass stays clear
for the life of the case!



ONLY THERMOPANE HAS A METAL-TO-GLASS SEAL
moisture and dirt can't penetrate!

Only *Thermopane* insulating glass has the famous, patented *Bondermetic Seal*®. It's a metal-to-glass seal which prevents condensation between the panes of glass . . . keeps out moisture and dirt . . . and, there's NO ORGANIC SEALING MATERIAL TO DETERIORATE! Look for the name "*Thermopane*" between the panes.

LIBBEY • OWENS • FORD GIVES YOU A 5-YEAR WARRANTY

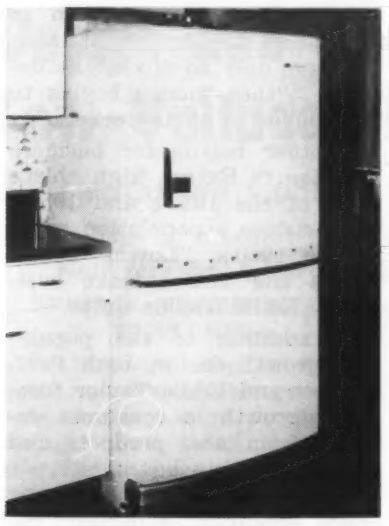
More than 7,000,000 units warranted to date.
Accept no substitutes.
For your own protection, insist on *Thermopane*.

Thermopane
INSULATING GLASS

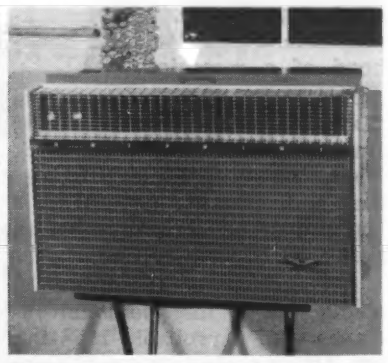
LIBBEY • OWENS • FORD GLASS COMPANY
608 Madison Avenue, Toledo 3, Ohio

LOF GLASS

For more information about products advertised on this page use Information Center, page 16.



LARGEST combination two-door refrigerator-freezer offered by Hotpoint for 1958 is a 16-cu. ft. model 8EN-16.



HOTPOINT lightweight portable air conditioner for 1958 claims up to 8,000 B.t.u. cooling capacity. New unit is available in 7½ and 12 amp. sizes for either 115 volt or 230 volt service.

Hotpoint Line--

(Concluded from Page 1)

bles ever produced, they weigh 75 lbs. each and measure 15 in. deep, 22 in. wide, and 14 in. high.

Company officials said shipping cartons for the new units will have handles so the customer can carry the unit home in his car, or take it with the family on vacation.

Using adjustable window frames and panels supplied in the carton, the customer can easily install the unit in less than 10 minutes, using only a sharp knife to cut the "Fiberglas" window panels, according to the manufacturer.

By removing a plug in the bottom of the cabinet, the portables can be used as a room dehumidifier, draining into a container. It is claimed to operate at three times the capacity of a regular dehumidifier.

A concealed control panel on the front of the unit provides 2-speed fan controls, thermostat, and an air directional control.

Other room air conditioners offered for next year include four "Wind-o-slim" models in 6,900, 8,700, 8,900, and 12,100 B.t.u. capacities and 23½ in. depth; three "Sill-o-ette" models in 8,800, 10,300, and 13,500 B.t.u. capacities and 17 in. depth; and a redesigned 2-hp. unit of 16,300 B.t.u. capacity that has been reduced in dimensions.

Largest of the eight combination refrigerator-freezers is a 16-cu. ft. model with 10 cu. ft. of refrigerator space and 6 cu. ft. of freezer space at the bottom. The two compartments have separate doors. The freezer door is operated by a foot pedal.

Five models have 12-cu. ft. capacity. These include single door and double door models with automatic defrosting and two cooling systems, two-door deluxe models with or without rollers, and a single door model with smaller freezer.

The remaining two combinations have 11-cu. ft. capacity with differing interiors.

The refrigerator line includes square-cornered models of 12.3 and 10.8-cu. ft. capacities and two round-cornered models in 7.7-cu. ft. capacity (NEMA ratings).

Hotpoint's new upright freezers are styled to match the new refrigerators. They are offered in 12, 16, and 18-cu. ft. sizes.

Chest-type freezers include a 12.5-cu. ft. model, a newly designed 17-cu. ft. model, a 20-cu. ft. model, and a two-door 26-cu. ft. unit.

The "Customline" appliances for built-in kitchens are available in pink, yellow, green, brown, copper tone, and satin chrome. Natural wood panels are offered for built-in dishwashers.

Two refrigerator-freezers and one 12-cu. ft. freezer are designed in this style, which emphasizes sculptured squares with black, red, and chrome accents.

'Family Birthday Party' Marks 20 Years

CUTTING CAKE celebrating 20 years business association between their firms are L. C. McKesson (l.), vice president of Ansul Chemical Co., and William Bours III, director of "Freon" sales, E. I. du Pont de Nemours & Co., Inc. They get an assist from Natalie Lueck, "Miss Wisconsin of 1957." Ansul was host at the "family birthday party."

Whirlpool Names Jack D. Sparks

ST. JOSEPH, Mich. — Appointment of Jack D. Sparks as director of marketing for "RCA Whirlpool" home appliances and "Estate" ranges was announced by John L. Bricker, vice president of Whirlpool Corp.

Formerly general manager of the laundry division, Sparks in his new post will be responsible for the complete merchandising program, including sales, advertising, merchandising, market research, and sales training.

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- Ice cream storage cabinets
- Self-service frozen food display cabinets
- Wall type display cases
- Heavy-duty commercial upright freezers

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STEEL TUBING TIPS:

HOW TO CUT FABRICATION COSTS ON REFRIGERATION SERPENTINES!

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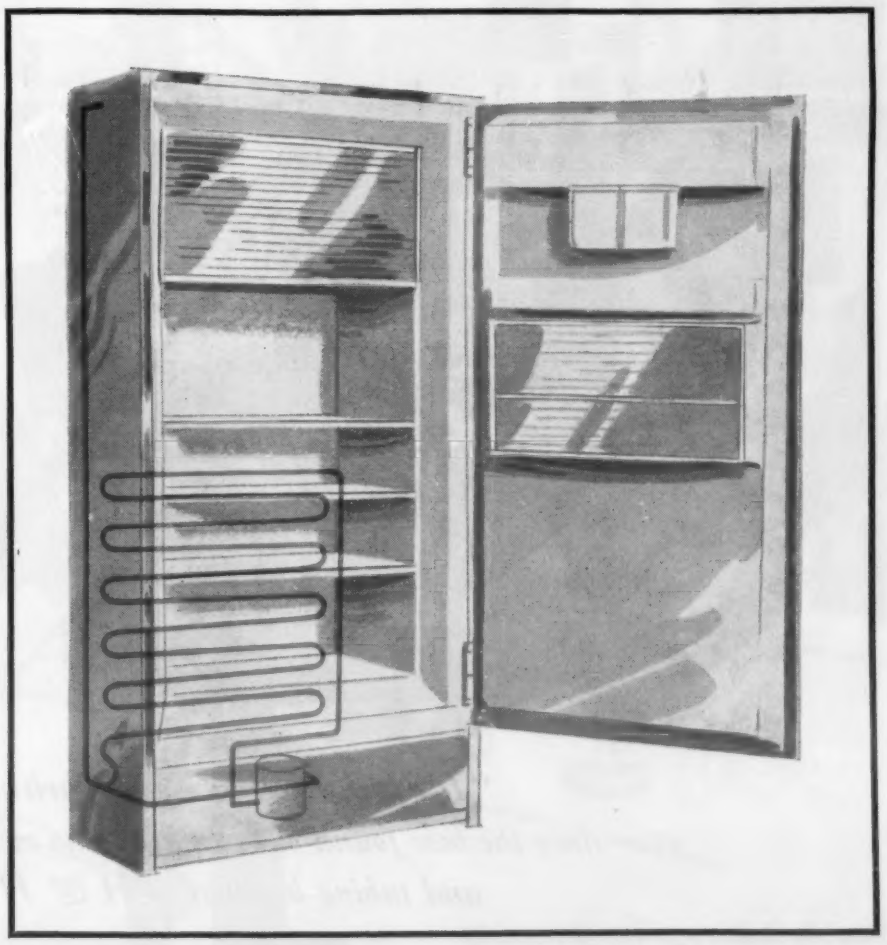

Extensive fabrication facilities at GM Steel Tubing offer you substantial savings in refrigeration serpentine applications. GM Steel Tubing's exclusive multiple bending equipment rapidly forms serpentines to cut production time and costs. And further fabrication for secondary bends, scoring of tubing breakoff, swaging, flaring or bending is also available on automatic equipment. All straight lengths are rotary straightened to maximum lengths of 80 feet to assure flatness and contact at all points on weld-wire condensers.

In addition, GM Steel Tubing assures you of trouble-free service once your product is in use. For example, all bulk coils of GM Steel Tubing are high-pressure tested and cleaned to many times beyond specifications. Also, all fabricated serpentines are individually tested with 300 lbs. of dry air to assure further dependability.

Refrigeration tubing is available in bulk random-length coils, specific cut-to-length coils, straight lengths, partially fabricated lengths and serpentines for use in condenser, evaporator and many other important refrigeration applications.

The unmatched fabrication facilities, rigid quality control measures plus the real economy of steel make GM Steel Tubing your best refrigeration buy. Contact your GM Steel Tubing Sales Engineer or write to: Tubing Sales Manager, Rochester Products Division of General Motors, Rochester, N.Y.

GM STEEL TUBING by ROCHESTER PRODUCTS

Inside Dope

By GEORGE F. TAUBENECK

(Concluded from Page 1)

They shouldn't be, though.

It figures. People who produce the NEWS do not have city-slicker backgrounds.

Editorial Director Phil Redeker, for instance, grew up in Elgin, Illinois. Associate Editor C. Dale Mericle resides all-year-around in remote Traverse City, Michigan, in the noble North Woods where they build snow men in summertime and communicate by carrier pigeon.

Assistant Editor Jack Sweet? Oxford, Mich. And Hugh Mahar, who puts this paper to bed every week—Grand Rapids.

Walter Schuler, who has supervised production of the publication for 26 years, came from Phoenix, Mich. (population: 87).

"Dope's" home town was Marshall, Ill. (pop. 2,222) where he got a job on the *Marshall Herald* as a "printers' devil" for 10 cents an hour at the age of 10, and started writing weekly "columns" and editorials.

P. Allen Schildhammer boyhooded in Lena, Ill., than which there *couldn't* be a *smaller* town (a post office, filling station, the Schildhammer's weekly *Bugle,* and a lonesome dog).

Advertising Manager Bob Price fought his way out of Scranton, Pa., which he describes as a city in which *everybody* at that time lived on the wrong side of the tracks.

President Ed Henderson was born near Six Gun, Colorado—or some such rugged pioneer outpost—and he's been a virile fellow ever since. General Manager Warren Jones grew up in Vermont, where all towns are small. And so on all the way through our exceptionally large staff.

"You can take the boy out of the country," an old adage goes, "but you can't take the country out of the man."

Pehaps that's why calm, salt-of-the-earth Real American Citizens read, believe, and trust the NEWS. We're their kind of folk.

Business Will Zoom, Say Taylor and Prof. Slichter

Happy Ed Taylor, executive vice president of Motorola, and gloomy Dr. Sumner H. Slichter, Harvard economist, both believe that business will get better soon. In fact, Dr. Slichter forecasts an upswing of 40% in sales and purchasing within the next decade.

Our good friend Eddie Taylor (formerly with Hotpoint) is a *practical* man; Dr. Slichter a *theorist.* Each has achieved stature as a crystal-ball-reader.

Dr. Slichter declares that a "new industry of discovery will expand the opportunity stockpile. Hence, there is little likelihood of a recession."

Brother Taylor, with whom "Dope" used to zoom around Detroit in company with Jack Rishel (now of Philco) figures that business-in-general is "catching its breath" before going on to greater heights.

High employment, continually rising wages and personal incomes, and a probable 1958 tax cut (it's an election year!) are cited as optimistic factors by each of these DISperate (not desparate) economists.

Taylor points out: (1) the automobile industry has high hopes for its exciting new 1958 offerings; (2) retail sales volume regularly records new triumphs every month; and (3) 1958 should be a better year for home equipment servicers.

Ed Taylor also notes that $8 billion in personal savings accumulated during the first half of this year—biggest gain in the past decade. "Americans can save only so much," he declaims, "then money begins to burn holes in their pockets."

Another reason for business optimism: Extra high birth rates of the 1940's and 1950's will produce a population bulge in the 1960's. "Loving makes homes and homes make business," Eddie Taylor quips.

In addition to the population growth factor, both Prof. Slichter and Eddie Taylor foresee a growth in consumer demand from new products and shorter working hours.

"We are not satisfied with a static standard of living," Dr. Slichter profoundicates. Adds this Taylor fellow: "Mr. Dealer, the best is yet to come."

Good News for Good Men

Lon D. Barton, manager of a Chicago employment agency, revealed to attendants at the NCRSA in the Windy City that 60% of the men who have been placed in top management jobs through his firm in recent months were over 50.

"Too much publicity has been given to the ridiculous age specifications which some companies set up a few years ago," Barton adds. "They're out-of-date. True picture is that mature judgment and know-how are uprated by intelligent Boards of Directors nowadays.

"They realize that a 35-year-old man rarely has acquired sufficient experience to make important decisions at top management level.

"A *proven* man in his fifties is their best bet."

This turn-around in employment practices is great news for the future of our nation.

Early Air Conditioning

London, England

Dear Dope:

May I too contribute to the history of air conditioning? One of the first air conditioning systems was introduced in Budapest, Hungary, in the new building of the House of Parliament built toward the end of the last century, 1886, commemorating the thousand-year anniversary of the Hungarian nation.

In this new building the floor and lobbies of both houses were air conditioned and not only could the desired temperature be obtained but the humidity also could be regulated by a simple yet effective cooling system, a combination of water and air-ventilation.

—LASZLE E. ACSAY

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For more information about products advertised on this page use Information Center, page 16.

Design and Operation of Low Voltage Thermostats

5. Two-Stage Cooling Thermostats

By Douglas S. Sterner, Sales Manager, Air Conditioning & Refrigeration Controls Div., General Controls Co.

SPECIAL THERMOSTAT FEATURES

Heating and cooling equipment and system changes have created many room thermostat changes until today the room thermostat bears little similarity to the room thermostat of a few years ago. Of course, modern design and styling have affected thermostat appearance, but we are primarily speaking of thermostat operation.

Particularly, the advent of residential air conditioning combining as it does dual systems for both heating and cooling has required room thermostats that combine in a single unit controls for both functions.

2-STAGE COOLING THERMOSTATS

Since many cooling systems today make use of two complete cooling systems (compressor, condenser, and evaporator) combined into a single package, it has been necessary to develop 2-stage (or 2-step) thermostats. One way of accomplishing this has been to provide two mercury tube switches on one cooling bimetal.

The mounting of the two mercury switches is such that there will be a 2° differential between them—the first stage mercury switch makes on a rise in room temperature at 2° F. above the "set" temperature of the room thermostat and breaks at the "set" temperature.

If the room temperature continues to rise with the first stage of cooling in operation to a temperature 4° F. above the "set" temperature, the second-stage mercury switch will make. The use of two mercury switches provides an additional safety feature since overlap of stages is practically impossible in factory set thermostats.

Two stage cooling (or heating) room thermostats have been developed in the single bimetal type for cooling (or heating), only, or in the two bimetal type for both cooling and heating. Generally speaking, single stage heating and two stage cooling thermostats have been required for all conventional two stage cooling and heating systems while two stage heating and single stage cooling thermostats have been required for *heat* pumps.

Present heat pump design to date has generally used a single compressor and the unit itself is a single stage cooling and heating system. However, because of insufficient heating capacity with low outside temperature conditions, additional heating has to be provided in the form of electric strip heaters.

The second stage of the heating side of the thermostat is used to control the strip heaters when additional heating capacity is required; frequently through outside thermostats so that the strip heaters cannot be pulled in by the room thermostat unless the outside air thermostat so permits. Frequently also, each bank of strip heaters is provided with a separate outside air thermostat so that the banks will come in gradually.

For example, the first bank thermostat may be set to make when the outside temperature drops to 40° F., the second bank thermostat would be set to make at 30° F., etc. Since the second heating stage of the room thermostat is wired in series with the outside air thermostats, the room thermostat could bring in the strip heaters only as the outside air thermostats permit.

Development work is being done, and heat pumps are in the field utilizing two-compressor systems such as described earlier. This makes sense especially in areas where the heating load exceeds the cooling load since it would permit the units to be more closely sized to the heating load and still not be oversized for the cooing load. Fig. 12 illustrates a thermostat typically used. You will note that, for cooling, each cooling mercury switch controls one cooling system through its contactor. Thus, the second unit is not used except when required by the load conditions within the cooled space.

It might be of interest to point out that it is easy to equalize the wear on the compressors during the cooling cycle simply by changing the leads between the "C" and "X" terminals of the thermostat. This should be done once a year. This feature can be used on conventional 2-stage cooling units.

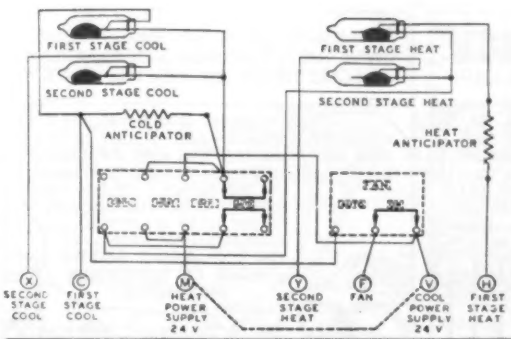

FIG. 12—Thermostat typically used. Note that, for cooling, each cooling mercury switch controls one cooling system through its contactor. Thus, the second unit is not used except when required by load conditions within cooled space.

Generally the first stage heating mercury switch will bring in *both* compressors, and the second stage mercury switch will bring in the strip heaters as described earlier. However, in areas where strip heaters are not required to supplement the heat supplied by the heat pump, then the first stage mercury switch of the thermostat would control the other compressor the same as they are controlled during the cooling cycle.

One interesting feature of the thermostat pictured is that it is designed to function *either* as a manual change-over thermostat or as an automatic change-over thermostat. As a manual change-over thermostat, the control switch can be placed *either* in the HEAT or in the COOL position and the thermostat will control *only* in accordance with the switch position. However, if the position switch is in the AUTO position, the thermostat will control automatically to provide *either* heating or cooling as is required in order to maintain the desired temperature.

There is a mechanical interlock between the heating and cooling bimetals of 4° F. minimum so that it is impossible to have an override (to raise the room temperature so much during heating that the cooling system would come on to take away part of the heat just introduced) or overlap so that both heating and cooling *could* be on at the same time. This is the ultimate in thermostat flexibility, satisfying the desire for manual or automatic change-over.

With the increasing interest and customer acceptance of automatic change-over, this thermostat is the ideal way to lead all customers to the desirable features of automatic change-over. It is believed that automatic change-over will follow all other such devices in customer acceptances such as automatic transmission since this is the age of automation.

(To Be Continued)

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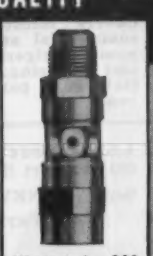

Illustrated: 200 Series, ½" or ⅝" female by male flare

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by

Jimmy Hatlo

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ARCHITECTS! NO DETAIL!! HOW AM I SUPPOSED TO KNOW WHERE THE DOORSTOPS GO IF THEY DON'T GIVE ME DETAIL?! WHATTA THEY THINK I AM···A MIND READER?!
LOOKS TO ME LIKE HE'S GOT ENOUGH DETAIL TO BUILD THE TAJ MAHOSKIS!
NOW LISTEN IN TO SAWRHOSS AS HE GIVES THE HIT-OR-MISS SPECIFICATIONS OF SOME TRICKY GIMMICK HE WANTS···
YOU SENT FOR ME?
YEAH··· I WANT A WIDGET BRACE···SEE···ABOUT SEVEN INCHES THIS WAY AN' ABOUT THIRTEEN INCHES THATAWAY ON THE BUNGLE BEAM···TWO SCREWS HERE···FOUR HOLES THERE WITH A LITTLE ORNAMENTAL DOMLAH ON TOP···AND I GOTTA HAVE IT TOMORRA MORNING!
SLO BLOW IRON & METAL WORKS
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Refrigerated Trucks— A Law Unto Themselves

TRANSPORTATION of perishable food products in refrigerated trucks and trailers, known to the trade as "reefers," has increased rapidly in recent years.

This cooled transportation is provided by thousands of truck operators — ranging from small owner-operators with only one or two vehicles—to immense truck lines.

And all this burgeoning development is great news for the refrigeration industry—especially for OEM parts suppliers.

Motor truck movement of hundreds of food products—many of which are fragile and easily susceptible to spoilage, freezing, overheating, contamination, and other types of damage (in many different types of equipment in all kinds of weather) has posed serious problems for shippers, truckers, and receivers of the products.

However, quite a few small manufacturers are taking advantage of the opportunities these problems present.

Take makers of small-quantity individualized clutches:

When a compressor is driven by the truck engine, a specially designed clutch can be coupled or uncoupled manually by a toggle switch or automatically by thermostatic control.

Resultant advantages are accurate temperature control, increased compressor life, more usable horsepower, more miles per gallon of gas, and use of stand-by electric motor operation.

If a separate gas engine is used, such as on tractor-trailers, a "custom" truck refrigeration assembly will accurately control temperature, increase compressor life, and allow a stand-by electric motor.

Manufacturers of controls, compressors, refrigerants, and driers who cater to the automotive air conditioning trade also are paying respectful attention to the expanding refrigerated truck business.

Total truck population of the United States at the end of 1955 was approximately 10 million vehicles, according to registrations. Of course, this total includes farm trucks and individually owned pickup trucks as well as trucks of all sizes used in commercial service.

Latest available survey of refrigerated truck and trailer population was made in 1954 and reveals a total of 195,115 units in service.

These ranged from light trucks of less than 1½ tons to the huge tractor-trailers. Here is the table on truck population:

Estimated Refrigerated Truck & Trailer Population of the U.S.A.

By Size of Vehicle

Size	% of Total	Est. Units In Service
Light Trucks (1½ tons and under)	20%	39,195
Medium Trucks (1½ to 2½ tons)	53%	103,000
Heavy Trucks (Over 2½ tons)	12%	23,520
Trailers	15%	29,400
Total Refrigerated Vehicles (1954)		195,115

By Type of Refrigeration System Used

Size of Vehicle	Cold Plate	Mech.	Wet Ice	Dry Ice	Totals
Light Trucks (under 1½ tons) 20%	77% 30,180	5% 1,950	3% 1,176	15% 5,879	100% 39,195
Medium Trucks (1½ to 2½ tons) 53%	65% 66,950	16% 16,480	7% 7,210	12% 12,360	100% 103,000
Heavy Trucks (over 2½ tons) 12%	30% 7,056	45% 10,584	11% 2,588	14% 3,293	100% 23,520
Trailers (Vans) 15%	6% 1,764	87% 25,478	2% 588	5% 1,470	100% 29,400

From these figures we can see that mechanically cooled trucks of all sizes add up to 54,492 or 27% of the over-all total. Adding the 1957 projected increase of 16% gives a total potential of 63,000.

It's a big market, and upshooting like an Earth-moon.

Dr. W. Donahue, University of Michigan's Division of Gerontology (science of aging), says we should quit worrying about "those young upstarts in the office" and see to it that our own brain cells get a regular, systematic work-out. Mentally, most of us are better off than we surmise. According to Dr. Donahue, we don't reach our mental peak until the age of 50; at 80 your intellect should be roughly equivalent to what it was in your 20's.

Many of us may not be able to make a great contribution to solving world problems, but we can start with ourselves. We can each strive to be a human catalyst bringing people together in common understanding and purpose. We can strive in all our contacts to reduce human friction and promote the smooth running of the gears of human adjustment.—WILFRED A. PETERSON in *"The Art of Getting Along."*

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'The Conscience of the Industry'

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QUESTIONS OKLAHOMA EGG COOLING EXPERIMENT

Master-Bilt Refrigeration Manufacturing Co.
St. Louis 10, Mo.

Editor:

Thank you for your thoughtfulness in providing the writer with a copy of page 30 of your Oct. 28 issue entitled "Egg Coolers a Profitable Item."

It is realized that your editorial department undoubtedly received this information from the Oklahoma Agricultural Experiment Station at Stillwater, Okla. as unsolicited, and the following comments are offered for what they are worth:

The title of the article is excellent, however, I am extremely doubtful whether the ¾ of a cent per dozen more is sufficient to warrant the investment that a poultry farmer must undergo in order to achieve the extra profit.

I believe that the project, as conducted by this facility, is in error to the extent that they used an air conditioning unit in both the egg cooling room and the seven case cooler, inasmuch as these units are designed to run at a considerably higher temperature and lower humidity than is generally considered desirable for egg storage.

It is generally understood that an air conditioning unit is designed to operate in the 75-85° F. range. When operated in the 58-61° F. range, as pointed out in the article, the evaporator or cooling coil will (of necessity) ice up, which not only lowers the humidity as the frost is suspended moisture, but will also lessen the efficiency of the unit due to the formation of this frost.

The researchers apparently have achieved a testing situation that is ideally suited insofar as a comparison of cooled versus uncooled eggs based on the equal quantities as indicated in the test. We have not been able to locate such an ideal testing situation.

I do believe, however, had the testing agency utilized a cooler that has been designed with high humidity, and the temperature 55-60° F., and compared the results of this system with that of the air conditioning unit, and of course with the non-refrigerated egg room, that the results might be even better for the poultry farmer.

H. D. WARNING,
Sales Manager

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BASIC CHEMISTRY

(As Applied In Refrigeration)

Part 5—Refrigerant Breakdown (Con't)

By Frank J. Versagi

When we studied oils we saw that they readily reacted with air or oxygen, especially at elevated temperatures. All of the simple hydrocarbons will burn.

The halogenated hydrocarbons, on the other hand, will not burn, even at the highest temperatures. By burning, here, we mean carry a flame as an oil will or as paper burns. An extremely rapid combustion is actually an explosion; the refrigerants will never explode through burning.

While they will not burn in the popular sense of the word, the halogenated hydrocarbons will oxidize at very high temperatures.

Have you ever noticed the foul odor which occurs if you should happen to use a torch on a piece of tubing which may have a little refrigerant vapor locked in some pocket? Or, sometimes, when using a halide leak detector?

What happens here is that, in contact with the flame or at the high flame temperatures in the presence of air, the refrigerants break down. The foul smelling gas is the deadly war gas phosgene. At high temperatures, the oxygen reacts with the refrigerants forming this gas which has the chemical formula $COCl_2$.

The tell-tale color in the halide leak detector is due to any liberated chlorine or fluorine reacting with the heated copper bar.

The amount of phosgene generated under these conditions is never enough to be concerned about. In fact, the disagreeable odor, itself, is a safety factor, since it would drive you out of the room if it became present in high quantities.

The chemical reaction between refrigerants and moisture is, of course, the most talked about breakdown in refrigeration. And not only in refrigeration.

Carbon tetrachloride, which is used so extensively for cleaning and solvent degreasing, must normally be used in corrosion resistant containers because it undergoes hydrolysis in use and generates hydrochloric acid.

Carbon tetrachloride plus water equals hydrochloric acid plus carbon dioxide.

$$CCl_4 + 2H_2O = CO_2$$

This same sort of reaction occurs with Refrigerant-12 or CCl_2F_2—with both hydrochloric and hydrofluoric acids being formed.

$$CCl_2F_2 + 2H_2 = 2HCl + 2HF + CO_2$$

This reaction is a slow one. This is not merely because small amounts of moisture are involved, but chiefly because organic reactions normally take place much slower than inorganic reactions.

For comparison, add a little hydrochloric acid to some baking soda.

The two materials will react immediately, generating bubbles of carbon dioxide gas, or effervescing. In this case, vinegar can be used instead of hydrochloric acid, although strictly speaking, vinegar contains an organic acid.

In contrast to this instantaneous reaction, the reaction between water and halogenated hydrocarbons can take days or weeks.

Exactly as in the case of oil breakdown, metals in the system tend to accelerate any chemical reaction which tends to occur, but by no stretch of the imagination can the formation of acid by hydrolysis be considered a speedy reaction.

This fact, of course, is advantageous to the serviceman. If moisture does get into a unit, but is removed in a reasonable time, there is no danger of extensive acid formation. If organic reactions were as fast as that between acid and soda, there would be no chance of avoiding acid formation once any moisture got into a unit.

(To Be Continued)

Now Representing...

Acme National Refrigeration Co. (Long Island City, N. Y.)—BYRDE, RICHARD & POUNDE ADVERTISING AGENCY has been named to represent the firm.

Recold Corp.—LEATHERWOOD SUPPLY CO., Houston, Texas, has been named a wholesale distributor of Recold commercial refrigeration products. KOLDAIRE SUPPLY CO., Fort Worth, Texas also has been named distributor of commercial items.

Kerotest Mfg. Co.—ROY B. McCRADY has been appointed a manufacturer's representative by the Brass Div. He has represented Refrigeration Equipment Co., Kansas City, Mo. wholesaler, Ansul Chemical Co., Texas Refrigeration Supply Co., Fort Worth, and Alco Valve Co. He will cover Kansas, Missouri, Iowa, and Nebraska.

Cincinnati Sub-Zero Products—GENERAL REFRIGERATION, Kitchener, Ont., Can. has been appointed sales representative in southern Ontario south and west of a line through Midland, Orilla, Lindsay, Peterborough, and Port Hope.

Sturtevant Div., Westinghouse Electric Corp.—A-C SUPPLY CO., Philadelphia, has been named distributor of industrial fans, ventilating sets, and a full line of steam, hot water, and gas-fired unit heaters in Delaware, New Jersey, and eastern Pennsylvania.

Carrier Corp. — ARCO ENGINEERING CO., Louisville, Ky. has been appointed sales representative for unit heaters in that area.

Refrigerating Specialties Co. (Chicago)—BARTON DISTRIBUTING CO., Indianapolis, has been named distributor in Indiana.

For Your Reprint Copy

"Emergency Diagnosis, Repair of Hermetic Unit Electric Components," by John L. Zant, mail this ad with your name and address to: Air Conditioning & Refrigeration News, 450 W. Fort, Detroit 26, Mich.

Only 25¢ each.

NOW . . . winter-controlled operation with the BOHN Air-Cooled Condenser and built-in Sensitizer

Reduces Cost • Simplifies Installation

ALL BOHN Air-Cooled Condensers in the ACS series feature the new all-season Sensitizer which adjusts automatically to seasonal weather changes. Maintains proper head pressure when outside air temperature drops. Eliminates hand valves and check valves . . . simplifies piping. Designed especially for applications where water is expensive or not in sufficient supply. For low first cost, low operating and maintenance cost, the answer is a BOHN Air-Cooled Condenser.

(Available in 2, 3, 5, 7½, 10, and 15 ton sizes.)

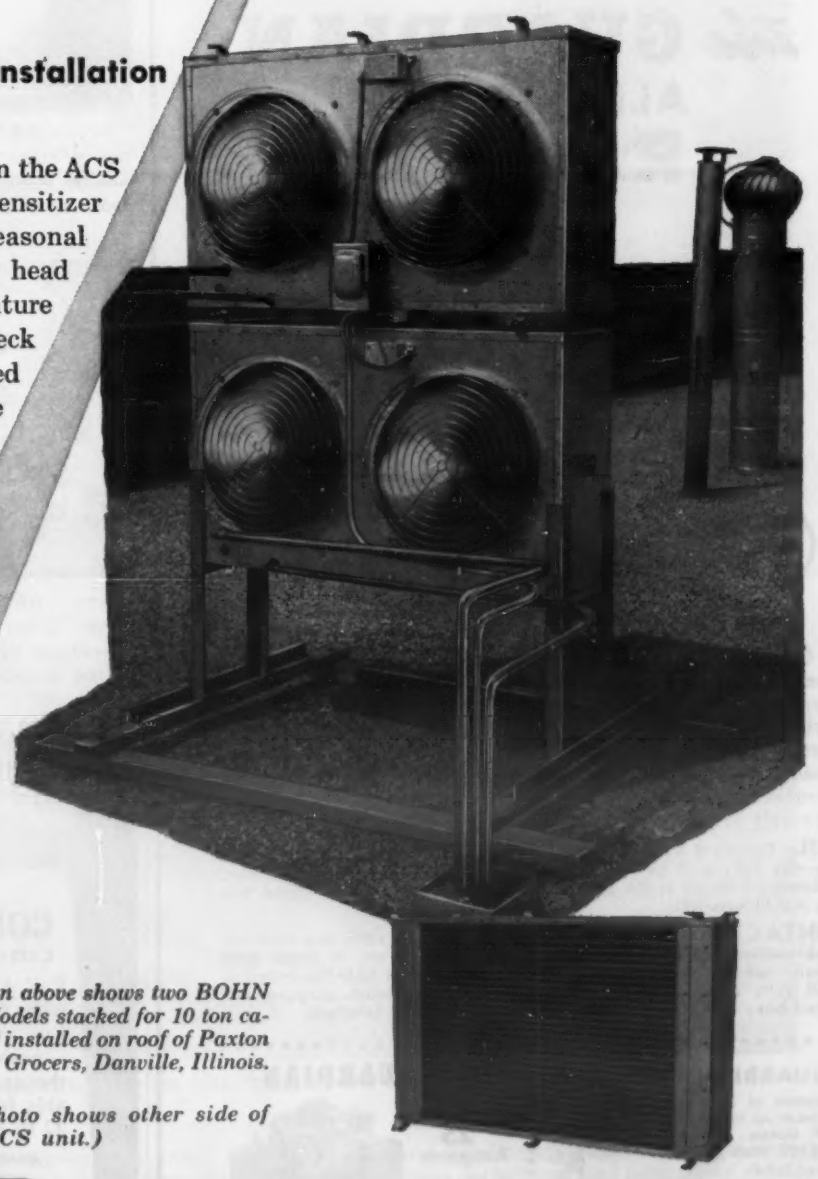

Illustration above shows two BOHN ACS-60 Models stacked for 10 ton capacity and installed on roof of Paxton Wholesale Grocers, Danville, Illinois.

(Small photo shows other side of BOHN ACS unit.)

BETZ DIVISION BOHN DANVILLE, ILLINOIS

Manufacturers of Commercial Refrigeration Industrial Air Conditioning and Special Heat Transfer Surfaces

BOHN ALUMINUM & BRASS CORPORATION • BETZ DIVISION • DANVILLE, ILLINOIS

MIGHTY MITE THERMAL PROTECTORS

FOR MOTOR OVERLOAD PROTECTION

MECHANICAL INDUSTRIES PRODUCTION COMPANY

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What Was New

At the ARI Show

On this and the following three pages the NEWS continues its picture coverage of new products offered at the 10th Air Conditioning & Refrigeration Industry Exposition in Chicago. For further information on these new products, please use "Information Center" blank below and refer to Key Numbers.

KEY NO. G-1230

PAT LEE shows the ease of adjustment with the new "Selectaire" metering device on Perfection's Model PAS-31A air conditioner. The unit is an air-cooled 3½-hp. or 3-ton unit. In the background is a unit containing the new "Flex-A-Coil" adjustable evaporator. A sliding base makes it possible to adjust the coil for any unit within its capacity range.

KEY NO. G-1231

STUDYING A Dunham-Bush between-the-studs heating, cooling unit is Linda Timmel, Morton Grove, Ill. Designed primarily for residential use, the Model CHC-150 unit has a capacity of 3,600 B.t.u./hr.

KEY NO. G-1232

4-STEP PART-WINDING motor series was being introduced by Wagner Electric Corp., and R. L. Tucker of Wagner explains some of the details to Tom Williams, Hall-Neal Furnace Co., Indianapolis.

KEY NO. G-1235

A NEW shaded-pole fan motor featuring short, flat design and quick connector is shown by H. E. Weisenborn, sales application engineer of Delco Products. The model C-660 motor features "full circle ventilation." Product engineer Charles Spindler looks on.

KEY NO. G-1237

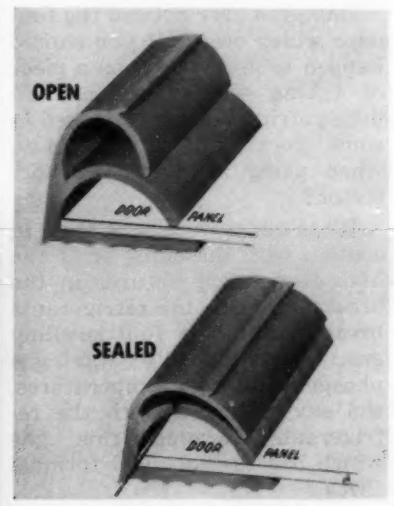
PACKAGED REFRIGERATION systems for use with reach-in, walk-in, and various other types of commercial refrigerators in high and low temperature applications were shown by Taylor Burch Co. Mr. and Mrs. Martin Burch pose with models which can be used in side mount, vertical mount, or top mount applications.

KEY NO. G-1233

GIANT FLAKE-TYPE ice maker with ice making mechanism on top and double door storage area below was shown by Liquid Freeze Corp.

KEY NO. G-1236

"BRACKETS TO FIT any chassis design" are one unique feature of the new Kold-Hold Truck Condensing unit. The company states this is the first package unit with such advantages as access door and sliding out provisions.



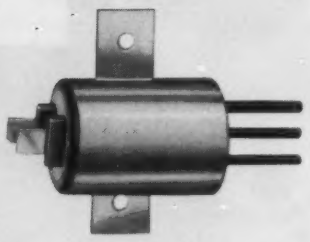
KEY NO. G-1238

DEVELOPED for use on the new low-tension spring and magnetic refrigerator and freezer doors, Jarrow's "Safeseal" gasket is said to assure a positive seal with as little as 4 lbs. pressure. The soft-acting rubber used in Safeseal seals perfectly with a light touch, according to Jarrow Products, Inc., the manufacturer. It can be made to exact requirements, for any low-tension spring or magnetic door.

KEY NO. G-1234

A NEW 3-way water regulating valve is pointed out by Betty Toussaint, daughter of the president of Metrex Valve Co.

PROVED
by leading appliance manufacturers
the GUARDIAN®
ALL-PURPOSE
RELOID



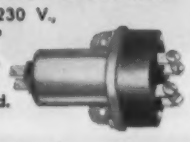
Underwriters' Laboratories Approved as a ¼ H. P. Industrial Magnetic Motor Starter...

● Connect up a Guardian RELOID in your circuit and you have a control that carries U.L. approval for appliance assemblies. In a special version the Guardian RELOID carries U.L. approval marking as a ¼ H.P. Industrial Motor Starter. Guardian RELOIDS are totally enclosed to resist impacts, dust and moisture—compact to save space—sturdy to outlast your product—flexible in application—priced extremely low.

COIL—Standard Voltages: Available for operation at 6 to 230 volts, 60 cycles A.C., or 6 to 110 volts D.C. **Frequency:** Standard 60 cycles. Available 25 to 60 cycles upon specification. **Terminals:** Standard, two male A.M.P. terminals.

CONTACTS—Rating up to 8 amperes at 115 volts, non-inductive. **Combination:** specify either single pole, single throw, or single pole normally open or normally closed. **Insulation:** Molded bakelite, tested at 1,500 volts, 60 cycles. **Terminals:** Three contact leads plugged with molded bakelite. Specify either A.M.P. or Douglas type terminals.

GUARDIAN POWERLOID
For control of 230 V., A.C. loads up to 3 H.P. Motors and 8400 Watt Heater loads. Totally enclosed. Low priced!



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SERIES 2100-U
25 Ampere
POWER RELAY
with Interchangeable Coil
NO SOLDER CONNECTIONS REQUIRED!

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GUARDIAN ELECTRIC
1603-P2 W. WALNUT STREET CHICAGO 12, ILLINOIS
"Everything Under Control"

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SPRING COMPENSATED!
LIQUID INDICATORS
E-Z-SEE Liquid Indicators with spring-compensated gaskets are positively leak-proof—proved by hundreds of thousands now in use. Suitable for Freon-12 and Freon-22 to pressures of 500 psi.
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Only 25¢ each.

Information Center

For *more information* on What's New products, current literature and catalogs available, equipment advertised in AIR CONDITIONING & REFRIGERATION NEWS use Key Numbers where designated or specify products advertised and we'll see that you receive this information promptly.

Products Advertised
(list name, page, and issue date)

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What's New or Current Literature Available

Key No. ..... Key No. .....
Key No. ..... Key No. .....
Key No. ..... Key No. .....
Key No. ..... Key No. .....
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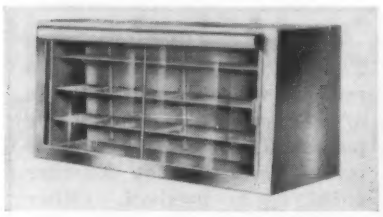
For more information about products advertised on this page use Information Center, page 16.

What Was New
At the ARI Show



—KEY NO. G-1239—

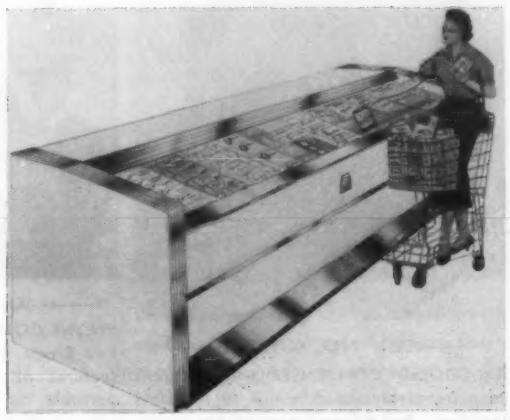
AN ILLUMINATED, self-contained refrigerated display case attracted attention in the Bastian-Blessing booth. As the refrigerating equipment is built into it, the case is portable and needs only to be plugged into an electric outlet to be ready for use. It is stainless steel inside and outside; has two sliding glass doors and three movable glass shelves, edged with stainless steel, to prevent chipping. The temperature regulator and fluorescent light which illuminates the case are both on the outside. The latter extends across the front at top of case and is concealed by a stainless steel hood.

—KEY NO. G-12313—

JOE BLAKE, St. Louis sales representative of United Wire & Supply, shows Vivian DeVine the copper finned tube which is an entirely new addition to United's line.

—KEY NO. G-12314—

SELF-SERVICE frozen food and ice cream merchandiser by Frigid Igloo Mfg. Corp. is streamlined to 33-in. depth and 32-in. high front. All merchandise is accessible from any part of the case in either 6 or 8-ft. long units. Frozen food compartment features automatic defrost in the all-steel welded case which has a metal night cover on piano hinges for storage under back hood. Refrigeration is with heavy-duty coils and fans. Breaker strips between inner liner and exterior of case prevent transfer of cold from inner liner to outer shell. For single or multiple installations, units are available in low or normal temperature models.



—KEY NO. G-12315—

DIALING FOR ICE—York's newest ice making machines can supply restaurants, hospitals, hotels, and other establishments with a variety of ice shapes at the turn of a dial. Producing from 200-450 lbs. of ice a day the machines can be dialed to make any sized ice ranging from king-size crescents to wafer-thin pieces. Shown above is an air-cooled model.

—KEY NO. G-12310—

"SUPER-HEAT" THERMOMETERS, a pair of dial thermometers—one for the evaporator inlet and one for the outlet—designed to provide a better and more practical way of taking temperature readings, and to provide faster reaction to reveal actual operating conditions, was introduced by Marsh Instrument Co. Bob Barnett, Marsh Co. sales manager (right) demonstrates it for A. R. Adler of Bloomfield, N. J., and Don Warner, Jenkinstown, Pa.

—KEY NO. G-12311—

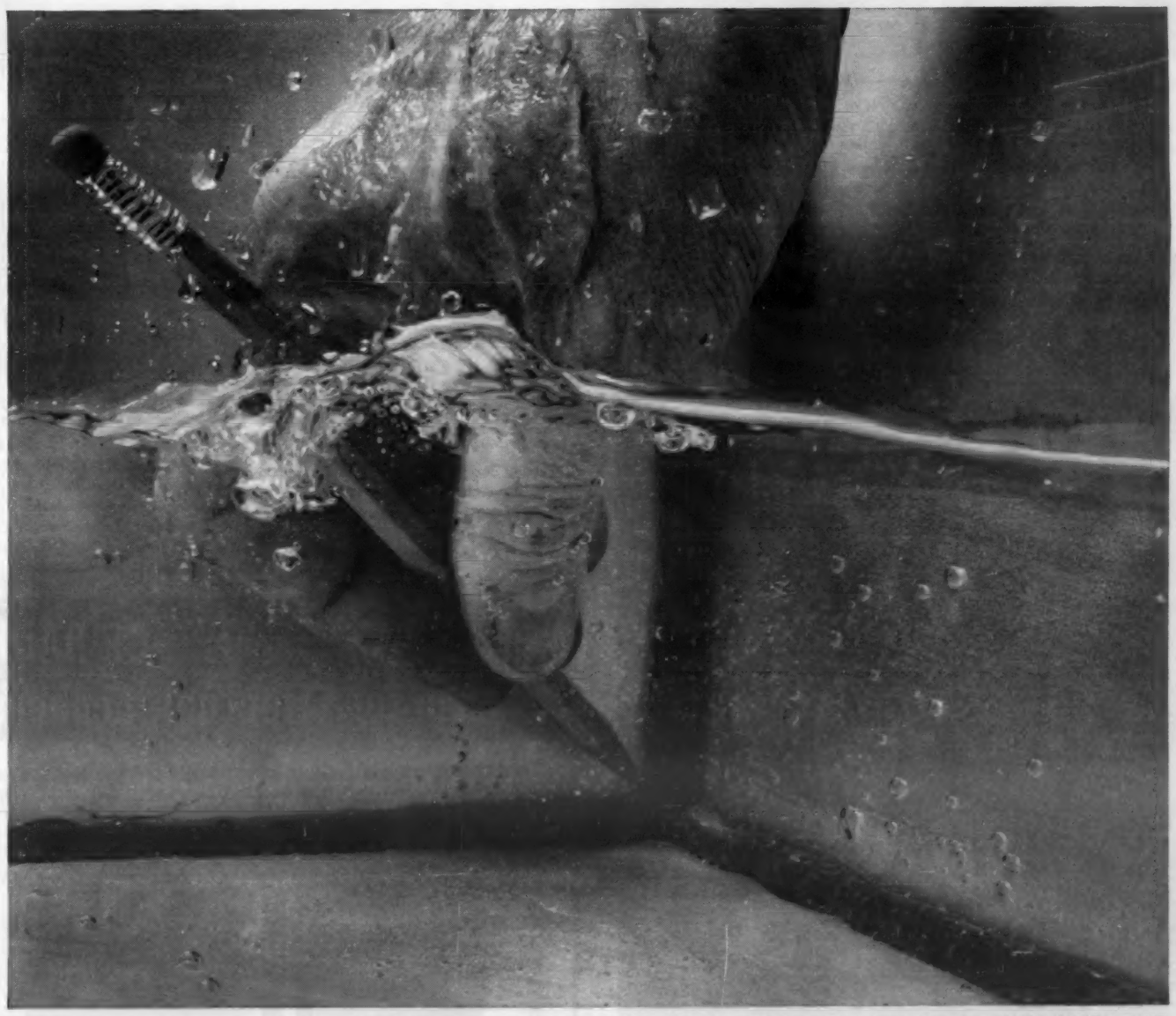
LOW TEMPERATURE SILVER brazing alloy, "Silvaloy," a product of American Platinum Works, was demonstrated by Leo Radak of that company.

—KEY NO. G-12312—

NEW MAGNETIC STARTERS, especially designed for the air conditioning and heating industries, and featuring a simplified lightweight trouble-free assembly, and new motor controls featuring advanced designs on economy of interchangeability, were shown by Furnas Electric Co. M. Johnson of Furnas (right) discusses a new model with Arnold Kawsky, Lord & Palmer, Belding, Mich.

Editor's Note: Three photographs immediately above were taken by Irving Alter of the Harry Alter Co., Inc. of Chicago.

Even under water
EC-373 seals stay moisture-tight



WATER CAN'T LEAK OUT TO RUIN AIR CONDITIONER PERFORMANCE WHEN LEAK-PROOF EC-373 SEALS THE SEAMS OF CONDENSATION PANS.

Exceptional water resistance?

EC-373 has it. *This 3M sealer locks seams moisture-tight*, guards air conditioner efficiency completely.

In fact, even after 500 hours submerged in a 140°F. detergent solution, EC-373 adheres tightly to metal, seals without leaking. What's more, EC-373 stays elastic but firm despite −25°F. cold or +250°F. heat. Vibration can't break this tough, flexible sealer.

The result—a leak-proof, lasting seal that keeps insulation dry, prevents freeze-ups or water seepage onto the floor.

And you can apply EC-373 fast and easily by pressure gun, flow gun, hand caulking gun, brush or spatula. There's no sag.

SEE WHAT 3M ADHESIVES CAN DO FOR YOU!

Consult 3M Research. Contact your 3M Field Engineer. Or for information and free literature, write on your company letterhead to: 3M, Dept. 1312, 417 Piquette Ave., Detroit 2, Mich.

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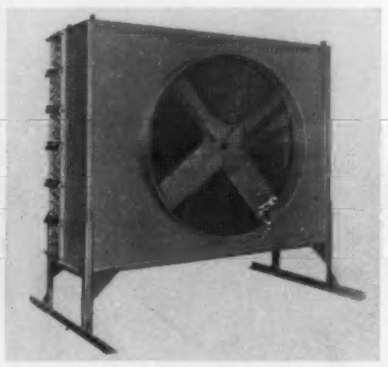
What Was New
At the ARI Show

Please use "Information Center" blank on page 16 to request more details on any of the products shown on pages 16, 17, and 18 of this issue. Refer to Key Number with each product. Other New Products shown in Chicago were pictured in the Dec. 2 and Dec. 9 issues of the NEWS.

KEY NO. G-12316

DESCRIBING the compactness of the new General Electric 30-ton water-cooled air conditioner is Gwen Shepard, Chicago. The company states that flexibility is the outstanding feature of the unit.



KEY NO. G-12318

AIR-COOLED CONDENSER with 50 tons capacity gives added range to McQuay, Inc. line. Belt-driven "Aircon" has single fan and motor assembly, features ripple aluminum fins on copper tubing.

KEY NO. G-12320

WAYNE COLVIN of Paragon Electric Co. of Two Rivers, Wis., points out the exclusive features of the new Paragon "Ti-Mite" portable air conditioning control to an interested prospect. Paragon also exhibited the new 8000 and 81000 Series "D-Frost-O-Matic" time controls and the TP-300 Series Time Control for commercial refrigeration defrosting applications.

KEY NO. G-12323

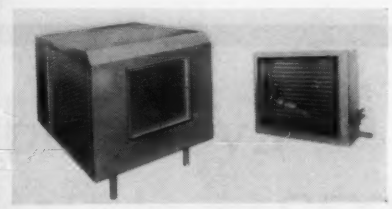
EIGHT MODELS OF AUTO AIR CONDITIONERS were displayed by A-P Controls Div., Controls Co. of America, manufacturer of refrigerant controls for car coolers. Margie Kraus draws attention to the display

KEY NO. G-12317

NEW LEHIGH "Take-a-Break" dispenser of coffee, cocoa, and bouillon self-service packets designed for use with a hot-and-cold water cooler is tested by Clayton Coulter, vice president of purchasing for Lehigh, Inc.

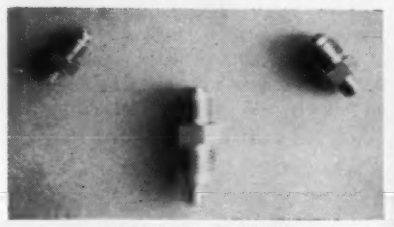
KEY NO. G-12319

THE NEW AEROQUIP 5500 coupling is shown by Don Collins, sales engineer. Self-sealing, the coupling is ideal for use on factory charged units since couplings can be made under pressure with no loss of refrigerant.



KEY NO. G-12321

NATIONAL-U. S. RADIATOR Corp. announced a new "Capitolaire" air-cooled residential air conditioner consisting of remote condensing unit and evaporator coil connected by pre-charged copper tubing. It is available in 2, 3, and 5-ton capacities.



KEY NO. G-12324

LEAK PROOF fusible plug (above) and new suction accumulator (right) were introduced by Refrigeration Research at the Exposition. Plug moves fusible metal out into an extension to prevent damaging stresses from being set up in the alloy as plug is tightened. Accumulator, installed just ahead of compressor, meters liquid and oil to compressor at controlled rate to end slugging.

KEY NO. G-12326

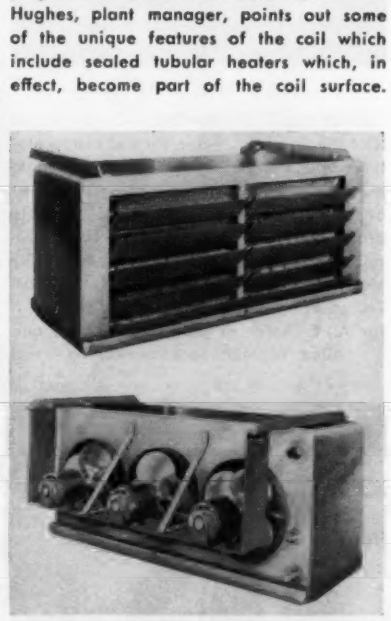
A NEW electric defrost low temperature coil was one of several products on display at the Larkin Coil booth. Here S. D. Hughes, plant manager, points out some of the unique features of the coil which include sealed tubular heaters which, in effect, become part of the coil surface.

KEY NO. G-12322

FIRST COIL SYSTEM using interchangeable condenser and evaporator is newest product of Silvercraft, Inc. Frank C. Lewis, president, demonstrates unit, which, he says, is equally efficient as evaporator or condenser.

KEY NO. G-12325

AUTOMATIC DEFROSTING evaporator employing a combination of hot gas and re-evaporation principles was introduced by McQuay, Inc. Re-evaporator is trademarked "ReVap." The "Zerofrost" single evaporator system is made in eight sizes.



KEY NO. G-12327

THREE-FAN RAPID FREEZE unit cooler with capacity up to 4½ tons was bowed by Howe Ice Machine Co. Unit features automatic hot-gas defrost with electric heated blanket, special headered circuits for maximum heat transfer.

when buying
copper or
copper base
alloy tubing
remember
TEMPER
it should
be tuned
to the task!
The right temper for the task can mean the difference between success or failure, profit or loss. But, relax! Whatever your requirements, specify United seamless copper or copper base alloy tubing. Do so with confidence that the industry's finest quality and production control systems will deliver tubing drawn precisely to your specifications . . . for temper, size, gauge, grain structure, cleanliness, dimensional perfection and cost!
You pay no more for this quality! United tubing, the finest in copper and copper base alloy, is available in coils, straight mill lengths or cut to your specifications.
For full information, write or call United.
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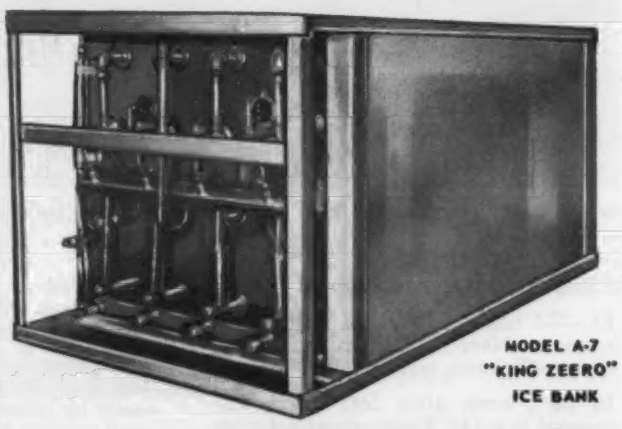
Add a *"King Zeero"* ICE BANK to Your Refrigerating System for Effectual, Economical Air Conditioning

The "King Zeero" ICE BANK is designed to deliver 32° to 34°F. ice water for recirculation through air cooling coils in exactly the right amount when and where it is needed. It levels off "peak" and "valley" loads. Peak loads many times compressor capacity are easily handled. Ice Banks may be added to increase existing capacity. Refrigerant: Freon, Methyl Chloride or Ammonia.



MODEL A-7
"KING ZEERO"
ICE BANK

The Patented Coils with Built-in Louvres opposed to the flow of water through the ICE BANK provide turbulence. This eliminates a mechanical agitator - insures all the water rubbing all of the ice. No upkeep or repair expense whatever.

The "King Zeero" Ice Storage System of water chilling has definite advantages over direct expansion, or other types of ice accumulators.

Saves power through smaller compressor requirement. Simple construction (no moving parts). Dependable in performance. Low operating and costs.

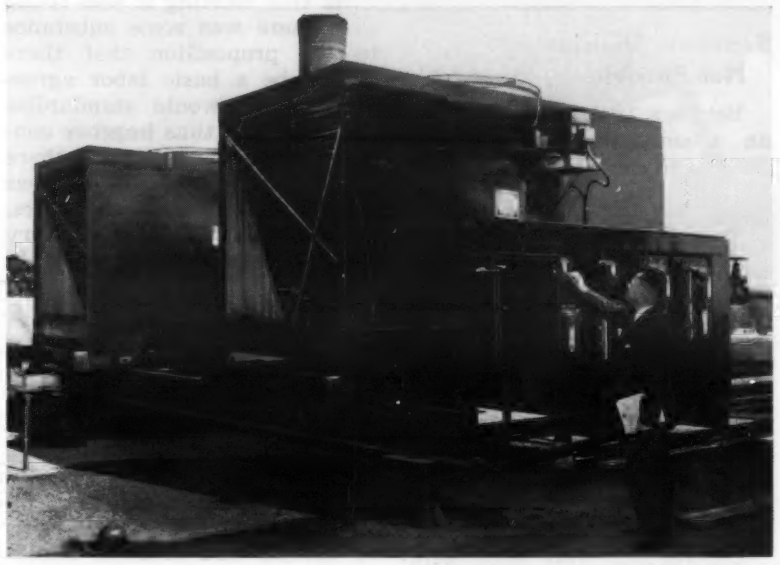
Let the ice stored during light loads take care of peak loads. The compressor need only handle the average daily load - not the peak.

CAPACITIES - 500 lbs. to 30,000 lbs. (72,000 B.T.U.'s to 4,320,000 B.T.U.'s) in a single unit. Multiple units may be installed.

THE KING ZEERO COMPANY
4300-14 W. Montrose Ave. - Chicago 41, Ill.
Manufacturers of Ice Builders - Ice Builder Cabinets - Ice Banks

For more information about products advertised on this page use Information Center, page 16.

Hospital Air Conditioning System Conceals All Ductwork and Provides Zone Control



TWO 80-ton Marley water towers were installed on the roof of the Louise Obici Memorial hospital, Suffolk, Va.

SUFFOLK, Va.—The Louise Obici Memorial hospital here, recently installed a total of 150 tons of cooling and was able at the same time to conceal all ductwork and achieve zone control.

The air conditioning committee for the hospital called in the Mechanical Engineering Corp., Norfolk, Va., to make a survey and an engineering layout.

Mechanical Engineering engaged the services of a consulting engineer, Ellis Stearns of C. Warren Bogan & Associates of Norfolk. General Electric packaged units were selected. All 26 units installed were divided into two groups, each group being serviced by an 80-ton Marley water tower installed on the roof of the hospital building, behind a penthouse.

All piping for ducts, water, and the electrical wiring were run through closets or pipe trenches which were part of the original structure. The biggest problem was concealing the air supply ducts above the drop ceiling in the corridors which were already occupied by pipes and ventilation ducts of all kinds.

The entire cooling system had to be installed so that there was a minimum of noise which might aggravate the patients. The individual units were placed in linen closets and out-of-the-way locations.

Where air distribution through ducts was installed above the corridor ceilings, there is no outward appearance to indicate air conditioning was installed several years after the building had been completed.

The hospital directors undertook to modernize their plant not only to meet the growing trend toward comfort cooling which would relieve patients from the discomfort of high-temperature days, but would also serve to keep the incoming air free from pollen and dust.

With the introduction of outside air, there was a lessening of normal hospital odors because of the added ventilation control.

TWO G-E packaged air conditioners were concealed in a small out-of-the-way closet. Shown inspecting the operation of the units is H. A. Hubbard, sales manager, G-E Air Conditioning Div., Mechanical Engineering Corp.

Graham Mfg. Co. Plant To Be Air Conditioned

LAURENS, S. C. — Daniel Construction Co. of Greenville will construct a multi-million-dollar textile plant here to employ 500 persons. The building will be air conditioned.

The plant, to house Graham Mfg. Co., will be erected on a site just outside the city limits.

The factory building, providing about 200,000 sq. ft. of floor space, together with operating equipment, will represent a multi-million dollar investment for fancy textile weaving operations.

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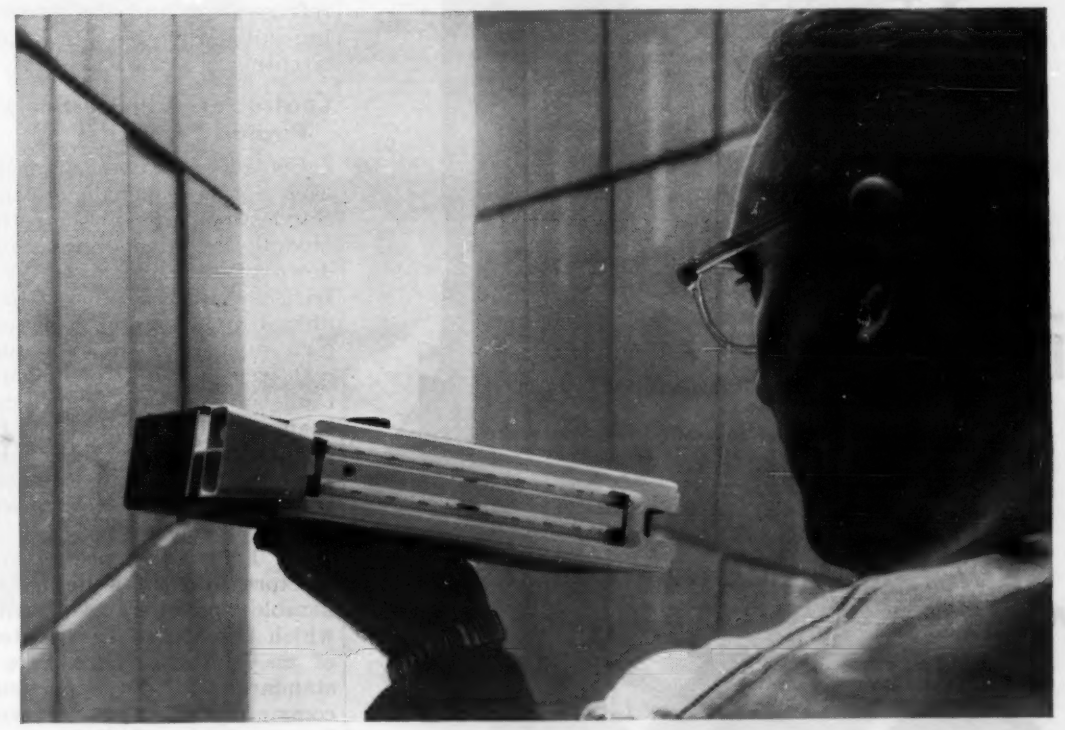
Product Knowledge, Protective Maintenance, Trouble-Shooting, Adjustment, Repair of Electric Motors.

Only 40¢ each.

For your copy, clip this ad and mail with name and address to: Air Conditioning & Refrigeration News, 450 W. Fort, Detroit 26, Mich.



NOW YOU CAN CHECK RELATIVE HUMIDITY ANYWHERE—NO SLINGING OR WHIRLING

This brand-new Bendix-Friez Psychron gives you extremely accurate relative humidity and dew point information with just the flick of a switch. It is a battery-powered portable psychrometer designed and manufactured to meet rigid U. S. Weather Bureau specifications.

Unlike ordinary sling psychrometers, the Bendix* Psychron requires no whirling or special technique to operate. Three standard-size flashlight batteries power a tiny fan that draws air over wet and dry bulb thermometers at a rate exceeding 15 F.P.S. As a result, the Psychron can be safely used in close quarters. It has a special thermal shield to avoid radiation effects for use in bright sunshine and built-in illumination for use in dark or poorly lighted areas.

Order direct from us or through our nearest dealer. For further information write: Bendix-Friez, 1498 Taylor Ave., Baltimore 4, Maryland. *REG. U.S. PAT. PEND.

Price includes metal carrying case, nylon neck strap, psychrometric slide rule, 1-oz. plastic water bottle and instruction book containing humidity and dew point tables.

$68.50

Friez Instrument DIVISION

Bendix AVIATION CORPORATION

Plenum type illustrated may be installed above or below furnace.

NEW WATERLESS CENTRAL COOLING

WILLIAMSON Waterless Wethermatic AIRefrigeration units can be added quickly and easily to any residential or store forced air heating system. Choose from plenum, duct, counterflow, suspended horizontal or console types for efficient low cost operation.

- No water needed
- No sewer or water connections
- No costly maintenance
- Pre-wired for easy installation
- 2, 3, 4, 5, and 7½ ton models
- Full tonnage provided

Write for complete information today

WILLIAMSON WETHERMATIC

AIRefrigeration

THE WILLIAMSON CO., 3320-E-12 Madison Rd., Cincinnati 9, Ohio

Labor-Management Cooperation

New Jersey RACCA-UA Agreement Incorporates Elements of Modern, Enlightened Relations

CLOSTER, N. J.—An outstanding example of labor-management cooperation is the joint industry program established for the refrigeration and air conditioning industry in New Jersey.

The program is one result of the statewide agreement signed last February by the Refrigeration & Air Conditioning Contractors Association of New Jersey, Inc., and the United Association. It was set up to carry out cooperative activities for the benefit of the industry, including an apprentice training program.

The program is financed through a joint industry trust fund, with contribution determined on an hours-worked basis.

The situation which led up to establishment of the joint committee activity was described by some members of the contractors' group in the following manner:

As far back as 1942, New Jersey was moving towards streamlined union-contractor relations which it now enjoys.

In the early days of 1942, Robert Lynch (now deceased), a strong factor in New Jersey labor and the business manager of the Jersey City local of the United Association, called together at a luncheon a group of refrigeration and air conditioning contractors.

He put forward the idea that an apprentice training program for the employes of refrigeration and air conditioning contractors, similar to the one in effect with the steamfitters, electricians, and others, would be mutually desirable.

The exigencies of World War II placed contractors in the unenviable position of trying to keep their mechanics which were irreplaceable.

During the remaining years of the war, contractors were training their own men, or utilizing those turned out in "crash programs" by manufacturers. The type of man turned out under these programs was such that he certainly was not a journeyman, nor was he even a highly trained apprentice with refrigeration and air conditioning skills. This was a hit or miss situation.

Contractors Clandestinely Pirated Personnel

Contractors were pirating each others personnel in a clandestine manner. Competitive bidding for labor, moral breakdown of the contractor's staff, friction—all contributed to an unhealthy situation. Untrained men purporting to be trained men were opening their own establishments with little more than a tool kit and a letter of credit. Both labor and management suffered from an adulteration of standards of practice and employment

By 1946, early pre-war contractors were in a highly vulnerable position, a position which threatened the existence of many firms. There were no standards in any particular community for work, or working conditions. Individual contractors were entering into separate agreements all over the state of New Jersey.

It was at this time that Lynch again came forward with a suggestion that the contractors form a strong, unified organization for dealing with a strong union.

In 1948 the Refrigeration & Air Conditioning Contractors Association, New Jersey, was founded, with a minimum dues structure and with elected officers. This New Jersey RACCA subsequently became affiliated with RACCA, National.

Separate Division Not Possible

Between 1948-1953, there was an attempt made by RACCA, N. J. and certain locals of the UA to establish a separate refrigeration division under UA conditions, but this was not possible during this period because of the unique local conditions.

But UA Local 274, Jersey City, with Frank DeNike, business manager, did organize a refrigeration division, and with the help of a dozen contractors, a relationship was established between labor and management, not strictly within the requirements of the UA constitution.

Contractors who were unorganized began to observe the success of those contractors who were organized and by such observations were motivated to join the RACCA and as a result signed with union locals.

Unestablished contractors wanted to enjoy the benefits of RACCA's successful labor-management program. This was an attempt to enjoy the benefits of associating with a union without organizational commitments. For a while this condition persisted unrecognized.

Difficulties arose in the unions at this time. It is incumbent upon union officers to keep peace among the members of their local. New-comer employes, upon receipt of membership, became an unwanted influence in the well-established local by making demands contrary to the traditions of the union.

This caused trouble between union business managers and contractors, because contractors were recommending poorly qualified employes to membership. This was called by some interested parties, "union by convenience."

Walk-Offs Began

Finally, in 1954, the men in the separate divisions of the union were not being recognized by the men in the older divisions. Walk-offs began.

General organizer Joseph F. Monahan, in charge of the Refrigeration and Air Conditioning Div. of the UA, extended his offices, and with Ray Kromer, RACCA National, called a meeting in Jersey City with the RACCA, N. J. membership.

At this meeting it was found that there was some substance to the proposition that there should be a basic labor agreement which would standardize practices and thus improve conditions. For, by this time, there was a high rate of business foreclosures among contractors, and for many there was a very narrow and discouraging profit margin.

Goals Outlined

At this time a set of goals were outlined which would provide members with:

1) a supporting arm of the best men in the business; 2) code and permit policing; 3) statewide, qualified labor pool; 4) service and erection standards; 5) wholesaler and distributor cooperation; 6) credit and banking assists; 7) public relation representation in the contractor's area; 8) costing procedures; 9) apprentice training, compulsory and controlled; 10) a friendly organizer from labor; 11) a strong, articulate voice on joint committees; 12) sales promotion in the contractor's area; 13) representative assurance of profits; 14) fellowship and assistance from association membership.

Provisions of Agreement

By January, 1957, these ambitious goals were appearing in sight, culminating with a statewide agreement effective last March, 1957. Briefly the agreement provided:

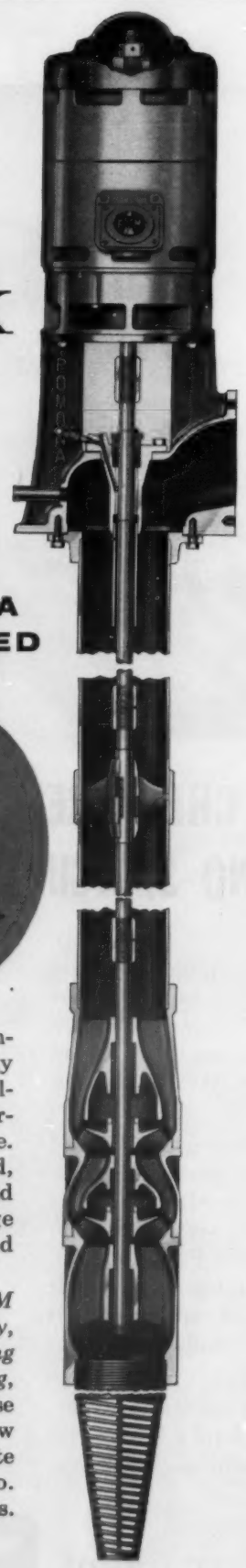
That membership is voluntary, but that once a contractor joins the RACCA, N. J., he is bound by the terms of the RACCA-UA agreement for as long as it is in effect, even though the contractor withdraws his membership from RACCA.

Also, should an employer be engaged in any disputes with the union, that employer's disputes ". . . shall not affect the rights, liabilities, obligations, and duties between the union and each other employer. . . ."

Also, the contractual agreement provided that any contractor entering into the agreement,

(Concluded on Page 22)

You'll want to look into this pump



NEW F-M POMONA WATER-LUBRICATED TURBINE PUMP

For ruggedness of construction, simplicity of maintenance, and strictly quality design throughout—this all-new Fairbanks-Morse Pomona turbine pump is today's greatest value. No other pump is so easily installed, so easy to adjust for varying field conditions, so simple to change between electric, belted or geared drive.

Ask for details on this new F-M Pomona pump for raw water supply, air conditioning, refrigeration, cooling towers, sump pumping, dewatering, etc. Contact your Fairbanks-Morse Sales Engineer today. Ask for new illustrated Bulletin 6957-1. Or write Fairbanks, Morse & Co., 600 So. Michigan Ave., Chicago 5, Illinois.

FAIRBANKS-MORSE

a name worth remembering when you want the BEST

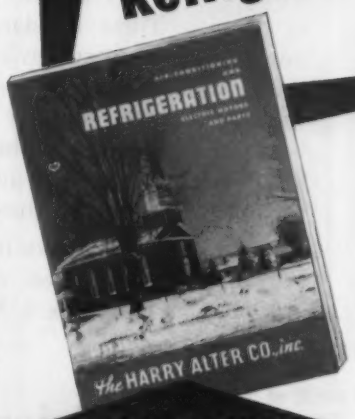
PUMPS • SCALES • DIESEL LOCOMOTIVES AND ENGINES • ELECTRICAL MACHINERY • RAIL CARS • HOME WATER SERVICE EQUIPMENT • MAGNETOS

We're Specialists In

Refrigeration

Air Conditioning

Electric Motors, Too!



SAVE MONEY, time, effort by ordering from this complete catalog.
WHOLESALE ONLY

PARTS and SUPPLIES

Over 10,000 items...most complete list in the world... carried in stock! You'll find them all in the NEW Harry Alter Dependabook No. 167 for Fall-Winter, 1957-58.

Write on your letterhead for the DEPENDABOOK

The HARRY ALTER CO., Inc.

Chicago 16, Ill. 1717 S. Wabash Ave. | New York 13, N. Y. 134 Lafayette St. | Dallas 7, Tex. 122 Parkhouse St. | Atlanta 10, Ga. 690 Stewart Ave., S.W.

FREE PARKING AND FAST COUNTER SERVICE AT THESE 4 BIG HOUSES

For more information about products advertised on this page use Information Center, page 16.

BUYING OR SELLING . . .

No matter which side of the desk you're on, you need the NEWS

The very reasons you read the NEWS . . . for information and to keep abreast of this fast-moving industry . . . make it your most important advertising medium! Your customers and prospects alike turn to the NEWS every week—just as you do—to learn the latest from the editorial columns and the advertising pages.

That's why the NEWS has been the foremost publication in the air conditioning and refrigeration industry for over a quarter of a century.

Now the NEWS brings you more advertising action than ever before. Top reader interest, unexcelled editorial coverage — more services for advertisers — improved visibility for advertisements and editorial columns—and the highest paid circulation in history help you *sell* your products faster.

Put yourself on the other side of the desk. Think of the reading habits of your customers and prospects, and you'll do your first advertising job where the first job is being done . . . . . in AIR CONDITIONING & REFRIGERATION NEWS.

AIR CONDITIONING & REFRIGERATION **NEWS**

The Newspaper of the Industry

The Newspaper That Carries More Advertising By Far Than Any Other Publication In The Field.

450 West Fort Street, Detroit 26, Michigan
NEW YORK, 521 Fifth Ave., MUrray Hill 2-1928—9, Robert M. Price.
CHICAGO, 134 S. LaSalle St., FRanklin 2-8093, Allen Schildhammer.
DETROIT, 450 West Fort St., WOodward 2-0924, J. B. Sullivan.
LOS ANGELES, 4710 Crenshaw Blvd., AXminster 2-9501, Justin Hannon.

RACCA of N. J. and UA Agreement--

(Concluded from Page 20, Col. 5)

would have to recognize the UA as the sole bargaining ". . . representative for all journeymen and apprentices in the employ of the employer with respect to wages, hours, and other terms and conditions of employment, of (the) work."

Further, the agreement covered not only wages and hours and rules of work, but it proscribed the tonnages of equipment to be worked upon.

Another contract requirement provided that "All members of Refrigeration and Air Conditioning Div. (UA) are to have Building Trades books marked 'Refrigeration and Air Conditioning Division.' "

Under the terms of the contract the union agreed to furnish the contractors who agree to the contract with a sufficient number of competent journeymen and apprentices who may be desired by him from time to time.

In order to carry out and supervise the requirements of the contract, one of the provisions was for the establishment of a joint committee:

"It is the mutual interest and concern of the parties to this agreement to foster and promote by legitimate and lawful means the progress and welfare of the refrigeration and air conditioning industry and the development of a higher degree of scientific improvement in the refrigeration and air conditioning industry, and to foster and develop greater confidence of the public in the industry through the use of advertising media and other public relations programs, and for the establishment of ethical practices for the industry.

"Therefore, there is hereby created a Joint Industry Committee for the refrigeration and air conditioning industry, . . . composed of ten members, five of whom RACCA shall designate and five of whom the Union shall designate."

In addition, the 10 members were to appoint an executive manager who was not to be a representative of, or affiliated with RACCA or the union.

Funds required for the operation of the joint committee programs are provided by a stipulation in the agreement:

"Commencing on March 1, 1957, each employer party . . . shall pay four cents an hour on all hours worked, straight time and overtime, on every employee covered."

Under the terms of the agreement an executive manager was appointed. He is Paul Hughes, Closter, N. J., who supervises the collection of and the management of funds collected.

Trustee membership. Representing the RACCA on the committee are: Charles Edmond, Engineering & Refrigeration, Inc., Jersey City; Richard L. Hughes, Electric Products, Inc., Jersey City; John S. Sanok, The Conditioning Co., Newark; A. G. Dietl, Dietl & Kraft, Inc., Newark; S. Filippone, Filippone Refrigeration Co., Jersey City.

For the union: Robert J. Buxbaum, general organizer, UA; Owen P. Kelly, special organizer, UA; Augustus J. Crowley, business agent, Local 475, Newark; Frank DeNike, business manager, Local 274, Jersey City; Patrick Doyle, business manager, Local 432, New Brunswick.

For the refrigeration and air conditioning industry in New Jersey there is now in existence a contract incorporating the elements of modern, enlightened labor-management relations. The current contract, now a national model, will run until Feb. 28, 1958.

Hotpoint May Chop Off 6,000 Dealers In Selective Franchising Program

CHICAGO — Hotpoint Co.'s roster of 14,000 appliance dealers may be reduced to 9,000, John F. McDaniel, general manager of Hotpoint's new sales and distribution department, asserted recently.

McDaniel said Hotpoint's recommended 1958 franchising program will place great emphasis on eliminating dealers who sell only a few Hotpoint units a year and do not appear interested in promoting Hotpoint products.

At the same time, he added, those dealers interested in promoting Hotpoint products will be given every merchandising assistance possible.

Hotpoint is currently announcing its shift to selective franchising in a series of advertisements to the trade. An early ad in the series declared:

"Dealerships will be appointed on the basis of a thorough analysis of the potential of each market, with the objective of affording ample opportunity for dealers to obtain full return on their merchandising efforts."

In what appears to be a part of this policy, Hotpoint Appliance Sales Co. in New York City and the General Electric Appliance Co. there have recently taken either the Hotpoint or General Electric line away from dealers previously handling both. GEA in New York City announced that it had disfranchised 100 dealers.

McDaniel said creation of the new sales and distribution department, announced in the Dec. 11 issue of the NEWS, is an attempt to streamline selling activities through distributors and dealers by integrating all company sales functions.

Although Hotpoint is decentralized through product departments, he explained, the company must present a unified front to its distributors and dealers as well as the consuming public.

Hotpoint, he declared, will take immediate and aggressive steps to achieve a closely welded and well-balanced factory-distributor-dealer team, with all members informed of objectives, plans, and procedures.

To keep dealers and distributors completely informed, the company will use magazine advertisements, phonograph records, personal letters, moving pictures, and other media.

Lee J. DiAngelo has been named manager of advertising and merchandising with responsibility for advertising, sales promotion, merchandising production, product publicity, and home economics for all product departments.

His organization includes Alfred M. Utt, manager of advertising; Joseph F. Adamik, manager of sales promotion; William C. Bartels, manager of merchandising production; Philip L. Crittenden, manager of product publicity; and Frances M. Michael, manager of the Hotpoint Institute.

McDaniel also announced the appointment of D. Edward Weston, Jr., formerly general manager of the television receiver department which is now a marketing function under McDaniel, as central regional manager for Hasco.

Floyd B. Williams, formerly central regional manager, becomes southeast regional manager. The New York Hasco manager has not yet been named.

John C. Sharp, Hotpoint president, announced that construction has started on the firm's new compressor factory, first unit in a long range expansion program. The factory, on a 770-acre tract northwest of Chicago, is scheduled to begin production on a new kind of compressor in early 1959.

Paragon Breaks Ground For $400,000 Factory To Boost Production

TWO RIVERS, Wis.—Ground has been broken on a new $400,000 manufacturing plant for Paragon Electric Co., manufacturer of automatic time controls, it was announced by Company President Edward V. Platt.

The new 72,000-sq. ft. plant which will be situated on a 27-acre tract at the west entrance to Two Rivers will eventually consolidate all manufacturing operations of the 52-year-old company at a single site. The company now operates five separate plants in the Two Rivers area which will be sold when the move to the new plant is completed, according to Platt.

The consolidation of manufacturing operations and the expansion of facilities is expected to result eventually in employment of over 500 Paragon employes.

"This will allow Paragon to increase production of time controls while instituting operating economies," Platt said.

Auto Air Conditioner Clutch Plant Set for Monette, Arkansas

MONETTE, Ark. — Clutches for auto air conditioners will be assembled in an Electro-Lock Co. plant now under construction here.

Parts for the air conditioners will be made in St. Louis, while clutch will be assembled here.

NEW!

anco

NO-MO-RUST

fills seasonal business slump

Anco No-Mo-Rust

Is a new product that is designed to work effectively for your customers and for your fall and winter profits. This proven-effective formula prevents rust and corrosion in chilled and tempered water systems, hot water heating boilers and small steam heating boilers.

Economical to use

One two-pound can of NO-MO-RUST will provide protection for each 250 gallons of chilled water or for each 125 gallons of hot water in the system. Available in 2-lb. and 10-lb. cartons, four cartons to each case. Order a few cases and assure yourself of a profitable year round business.

Specialists in making water behave

Anderson Chemical Company, Inc.

Box 1424 • Macon, Georgia

DESIGNED TO LEAD... PRICED TO SELL!

THE THRIF'AIRE BOTTLE COOLER

First in economy . . . finest in design and now the new *low low* price of the La Crosse Thrif'aire makes it your greatest value in bottle coolers! The exclusive "plug-in-panel" refrigeration unit is quickly and easily removed . . . adaptable to many uses. Beautiful grey baked enamel . . . 42" and 62" lengths . . . fingertip, stainless steel, slide-away doors.

Your welfare is ours . . . We don't sell direct

WRITE TODAY

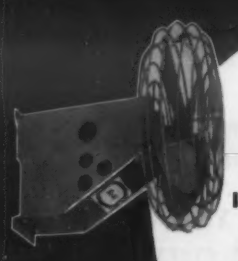
LA CROSSE COOLER COMPANY

3000 LOSEY BOULEVARD SOUTH, LA CROSSE, WISCONSIN

WALK-IN COOLERS | BEVERAGE COOLERS | DIRECT DRAWS | CUBE MAKERS | DRAINBOARDS

EXPORT OFFICE: 125 BROAD ST., NEW YORK, CABLE: EXIMPORT

MOVING AIR IS COLDER AIR!



DOLE Air-Cel CIRCULATING UNIT

Insures even distribution of refrigeration when used with truck plates

• LIGHTWEIGHT • COMPACT

Dual AC/DC fan motor operates on truck battery during the day, alternating current at night. Automatic switchover.

DOLE REFRIGERATING COMPANY

5920 NORTH PULASKI ROAD, CHICAGO 30, ILLINOIS

103 PARK AVENUE, NEW YORK 17, N. Y.

Dole Refrigerating Products Limited
44 Elgin Street, Brantford, Ontario

Write for Engineering Catalog GE

Maximum Refrigeration Efficiency DOLE THE Cal LINE

Air-Cel CIRCULATING UNIT

For more information about products advertised on this page use Information Center, page 16.

Death Notices

Daniel H. Lewis, 53, owner of Lewis Engineering Service, Detroit heating and air conditioning firm, died recently in North Detroit General Hospital after a long illness.

Owner of the firm for 20 years, Lewis was a member of the American Society of Refrigerating Engineers, the American Society of Heating & Air-Conditioning Engineers, and the National Association of Power Engineers.

* * *

John Francis Brooks, 59, vice president in charge of service and operations for R. Cooper, Jr., died recently at his home in Chicago.

Brooks had been associated with the Chicago General Electric distributor for more than 25 years. He leaves his wife, Dorothy, two sons, two brothers, and two sisters.

Looking for a Business to Buy . . . ?

Check the Business Opportunities Section in the classified advertising columns.

U.L. & A.S.M.E. WATER-COOLED CONDENSERS ¼ TON to 15 TONS and LIQUID RECEIVERS for EVERY REQUIREMENT

Write for our NEW Catalog

STANDARD REFRIGERATION CO.
332 S. Hoyne, Dept. C
Chicago 12, Ill.

Contests Captured Conventioneers Attention In Chicago

GUESSING how many 3-in. pieces of Wolverine Trufin are in the copper cauldron are C. H. Kuthe, engineering service manager, T. F. Vigmostad, St. Louis sales representative, C. A. Glassman, Jackson, Mich., and A. R. Kaspark, technical sales manager. Edward J. Solski, Controls Co. of America won a TV set with his guess of 2,025 pieces. The cauldron contained 2,028 pieces. Runners-up were Eldon Barker, Percival Refrigeration & Mfg. Co. and R. H. Gustafsen, Sunstrand Engineering Co.

A DISPLAY and contest designed to show the simplicity of servicing or changing the P.O. Thermo Valve were the features at the Alco Valve Co. booth. Taking part in one demonstration are Harry Kousbroeh, Charlotte, N. C.; Edward C. Lee, Detroit; Jim Parrott, Alco sales engineer; E. Lodwig, Alco New York district manager; and J. Mulcahey of Hartford, Conn.

FIRST WINNERS of transistor radios for matching the numbered tags they received at the Henry Valve Co. booth where they saw Henry's new "Dri-Cor" filter drier, were William Gilster of Wagner Electric Co. (dark suit), and S. E. Leinwand of Detroit Controls. Checking their tags are June Pickney and Jackie Walker.

MARJORIE VAUGHAN points to the television set won by Allan Trask of Utica, N. Y. who guessed within 3 in. the correct length of copper tube in the coil displayed at the booth of Viking Copper Tube Co.

Iron Fireman Will Handle National Sales, Service for Conco Residential Equipment

CLEVELAND—Iron Fireman Mfg. Co. and H. D. Conkey & Co. announced that arrangements have been made whereby Iron Fireman will handle all national sales and service of the Conco line of residential heating and cooling equipment.

Under this new arrangement, which becomes effective Jan. 1, 1958, H. D. Conkey & Co. continues to manufacture this equipment at its Mendota, Ill. plant. Iron Fireman will maintain warehouse stocks in Mendota and other points.

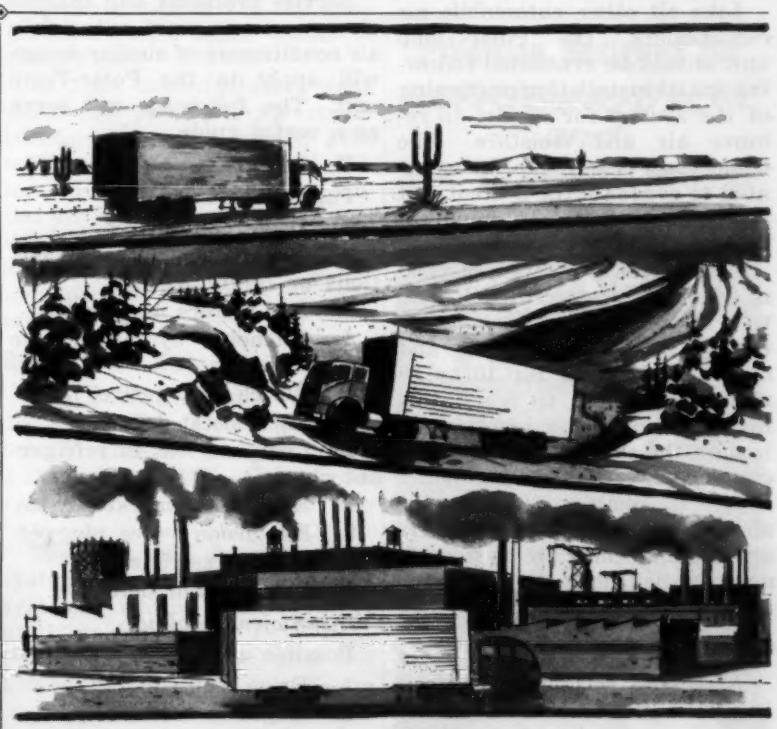
R. W. Conkey, president of H. D. Conkey & Co., and L. J. Cox, president of Iron Fireman, said the arrangement "will make possible worthwhile economies in production and marketing which will prove of substantial benefit to the two companies, to their respective dealer organizations, and to the general public. No corporate merger is involved."

Chase Industrial Refrigeration Fire Damage Is $200,000

CINCINNATI — A fire believed to have started in a waste can, caused an estimated $200,000 damage to the Chase Industrial Refrigeration Equipment & Engineering Co. here shortly after Thanksgiving.

Rebuilding of the plant in adjacent Reading started immediately.

P. F. Rusche, general manager, said the firm manufactures mobile air conditioning units for the government.



Ice cream stays brick hard in Warren's new Self-contained

Strictly brick hard ice cream day and night—day in, day out—thanks to drastic subfreezing temperatures and a sure, unique defrosting system. Proved performance in tropical and high-humidity climates. A wide-open display and a more-than-generous capacity, too.

A one-shelf merchandising canopy, of the same top-quality materials and workmanship as the cabinet itself, is optional. The adjustable shelf adds impact to impulse items or even staples, and invaluable economy from this maximum use of floor space. The cabinet is genuine porcelain and the canopy, baked enamel—both finishes acid resistant and rugged. The good looks is Warren Diamond Jubilee styling. Warren COLORAMICS® bands optional at no extra cost.

There's no simpler, surer way to block-busting packages of ice cream, *merchandised right,* than in the new Warren Self-contained.

Warren Refrigerators

P. O. BOX 1436 ATLANTA 1, GEORGIA

EXPORT DIVISION: P. O. BOX 27884, LOS ANGELES 27, CALIFORNIA

G-E Air Conditioning Franchises Star Steel

BLOOMFIELD, N. J. — Star Steel Supply Co. and its Burton Co. Div., southeastern Michigan distributor of heating and air conditioning equipment, have been franchised by General Electric's Air Conditioning Div. for commercial and industrial packaged units manufactured here and G-E's home heating and cooling products which are produced at the company's Tyler, Texas plant.

According to H. N. McMenimen, Jr., manager-sales for the General Electric Air Conditioning Div., the appointment of Star Steel Supply as a franchised distributor in the Detroit area "represents a positive move by General Electric Co. to strengthen its distribution in keeping with the anticipated increase in production and sales for 1958."

Carl Beltz is manager of air conditioning for the Burton Co. of Star Steel Supply.

partlow

Partlow Recording Temperature Control for applications where continuous temperature record is essential.

Partlow Indicating Temperature Control for use where no temperature record is required.

controls in-transit temperatures...*and proves it*...under any road conditions!

Partlow Temperature Controls are being specified on more and more in-transit applications — because rough-road vibration and shock will not upset them . . . or lessen their accuracy! Products can be trucked through any extremes of temperature, shipped over hardest-to-haul highways — and these mercury-actuated controls will maintain their precise settings to within 1% of scale range!

Partlow Recording Controls maintain temperatures, at the same time providing a continuous temperature record, from start to destination.

Indicating and non-indicating controls also available for truck or railway transportation.

Specify Partlow for stationary applications where accuracy and super-dependability are essential.

Tell us your temperature control problems. Our Engineers will gladly work with you.

MAIL COUPON FOR DATA

THE PARTLOW CORPORATION
Dept. C-1257, 2 Campion Road, New Hartford, N.Y.

We are interested in Partlow Controls for the following applications:

.....

.....

☐ Have representative call ☐ Send catalog data

Company.....

Street and Number.....

City..... State.....

Signed.....

Servicing Automobile Air Conditioners

(Vol. 2)

BY C. DALE MERICLE

The Polar-Temp unit is the eleventh make to be discussed in the current series on automobile air conditioners. Makes previously described in this series were A.R.A., Artic-Kar, Frigette, Frigikar, Kauffman, Mark IV, Airtemp, Mobilette, Novi, and Vornado.

Models discussed in the current series are 1956 and/or 1957. For data on earlier models readers are referred to the original series of articles, which is available now in the handy manual, *Servicing Automobile Air Conditioners.*

Polar-Temp (2)

Air Controls Corp.
400 Stonestreet Ave.
Rockville, Md.

SERVICE HINTS

Evacuating System

Like all other automobile air conditioners, the Polar-Temp unit should be evacuated following initial installation or opening of the system for repairs to remove air and moisture. The compressor itself can be operated to evacuate the system, but it is usually better to employ a good vacuum pump instead.

The double evacuation method is generally preferred. The system is pulled down to approximately 28 in. of vacuum and held at this point for 10 to 15 minutes. Failure to reach this low a vacuum would indicate a leak in the system, assuming, of course, that the vacuum pump itself is okay. The vacuum should be broken with Refrigerant-12, and then the system is again pulled down to 28 in. for another 10 minutes.

Charging System

After the second evacuation, the manufacturer recommends that 1 oz. of "Trace" and ½ lb. of Refrigerant-12 be admitted to the system to check for leaks.

When examination of all joints shows no indication of leaks, 2 lbs. of Refrigerant-12 can be added to bring the system up to the full charge of 2½ lbs.

Trouble Chart

Service problems and diagnosis common to most automobile air conditioners of similar design will apply to the Polar-Temp unit. The following will serve as a useful guide.

No cooling.

Possible causes:

1. Drive belt broken.
2. Loose electrical connections or faulty wiring.
3. Fan motors inoperative.
4. Solenoid by-pass valve won't close.
5. Clutch inoperative.
6. Thermostat defective.
7. Complete loss of refrigerant charge.
8. Evaporator blocked by ice.
9. Expansion valve plugged.
10. Lines restricted.
11. Compressor defective.

Insufficient cooling.

Possible causes:

1. Drive belt slipping.
2. Magnetic clutch slipping.
3. One or both fan motors defective.
4. Condenser clogged.
5. Shortage or overcharge of refrigerant.
6. Thermostat defective.
7. Solenoid by-pass valve won't close completely.
8. Lines restricted.
9. Expansion valve restricted.
10. Compressor service valves partially closed.
11. Air in system.

MARSH
Instruments
THE SERVICEMAN LINE of Testing Gauges, Testing Thermometers, Timers, etc.
PRESSURE GAUGES and Dial Thermometers for all services.
MARSH-ELECTRIMATIC, Water Regulating Valves, Solenoid Valves.
MARSH INSTRUMENT COMPANY
Sales Affiliate of Jas. P. Marsh Corporation
Dept. D, Skokie, Ill.

Wolverine Tube Moves Administrative, Sales Offices To Allen Park

DETROIT — Wolverine Tube, Div. of Calumet & Hecla, Inc. has moved its administrative and sales offices from the Guardian building here to suburban Allen Park, Mich. at 17200 Southfield Rd.

Plant personnel responsible for Detroit plant purchasing, engineering, production, and related plant operations will remain at the Detroit plant offices on Central Ave.

Highlighting major events of its over 40 years of tube making, Wolverine put out a colored brochure telling of the move. There is also a research center with the new main offices.

Divisional management personnel responsible for the direction of sales, finance, operations, purchasing, industrial and public relations, and their staffs will be located in the new offices.

Since 1955 Wolverine's Detroit plant has been undergoing a multi-million dollar modernization program. Besides a Decatur, Ala. plant, early next year Wolverine tubing production will begin in a multi-million dollar plant being completed in London, Ont., Can. It will make tube for export.

20th Power Parley Set for March 26-28

CHICAGO — The 20th anniversary meeting of the American Power Conference will be held March 26-28, at the Hotel Sherman here.

The conference, sponsored annually by Illinois Institute of Technology in cooperation with 14 colleges and universities and nine technical societies, provides a forum for discussion of problems and exchange of information concerning the electric power industry and associated activities, including utilization, conservation, fuels, water technology, research, maintenance, sales, and management.

Inquiries concerning the conference should be addressed to conference director R. A. Budenholzer, mechanical engineering department, Illinois Institute of Technology, 3300 Federal St., Chicago 16.

Government Contracts

NOTICE TO SMALL FIRMS

QM Purchasing Agency, Columbus General Depot, Columbus, Ohio.
DISPENSER, DRINKING WATER, mechanically cooled pressure type, glass fillers 28½ gallons per hour minimum draw off capacity, FSN 4110-255-8764, Fed. Spec. 00-C-566c—60 ea.—IFB 58-305B—Bid Opening 23 Dec. 57.

NAVY

Navy Purchasing Office, Brooklyn, N. Y.
REFRIGERATORS, ELECTRIC, 9 cu. ft. net capacity minimum, Manual defrost, Spec. AA-R-211C—50 ea.—IFB N140-292-58B—Bid Opening 13 Dec. 57.

Yards and Docks Supply Office, Port Hueneme, Calif. Attn.: Purchase Division.
The following items are procured under IFB 160-38-58B—Bid Opening 30 Dec. 57.
REFRIGERATOR, ELECTRIC household, 10 cu. ft., 800 ea.—12 cu. ft., 200 ea.—Fed. Spec. AA-R-211C dated 20 Aug. 52 with Amendment 1 dated 20 Oct. 54—IFB 160-38-58B—Bid Opening 30 Dec. 57.

AIR FORCE

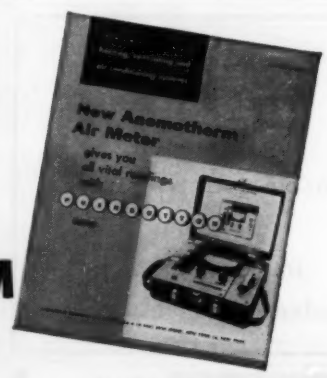
Base Procurement, Randolph Air Force Base, Texas.
INSTALL AIR HANDLING UNIT in Cafeteria, RELOCATE AND AIR CONDITION BARBER SHOP, Modify Cafeteria, Modify Bowling Alley, Install Air Handling Unit in Bowling Alley, Basement Bldg. 905, Randolph Air Force Base, Texas—Job—IFB 41-606-58-40—Bid Opening 20 Dec. 57.

Air Force Contracting Office, 3800th Air Base Wing, Maxwell Air Force Base, Ala.
MODIFY AND AIR CONDITION BLDG. 501, Gunter Air Force Base, Ala.—Job—IFB 01-600-58-23—Bid Opening 20 Dec. 57.

GENERAL SERVICES ADMINISTRATION

General Services Administration, Region 7, Business Service Center, 1114 Commerce, Dallas, Texas.
AIR CONDITIONING, U. S. Courthouse, Austin, Texas—Job—IFB CR71-425—Bid Opening 12-17-57.
AIR CONDITIONING, Fed. Office Bldg., Houston, Texas—Job—IFB DC8-97—Bid Opening 12-17-57.
AIR CONDITIONING, U. S. P.O. & Courthouse, Alexandria, La.—Job—IFB CR71-419—Bid Opening 12-17-57.

FREE
BULLETIN
tells how
ANEMOTHERM
Air Meter



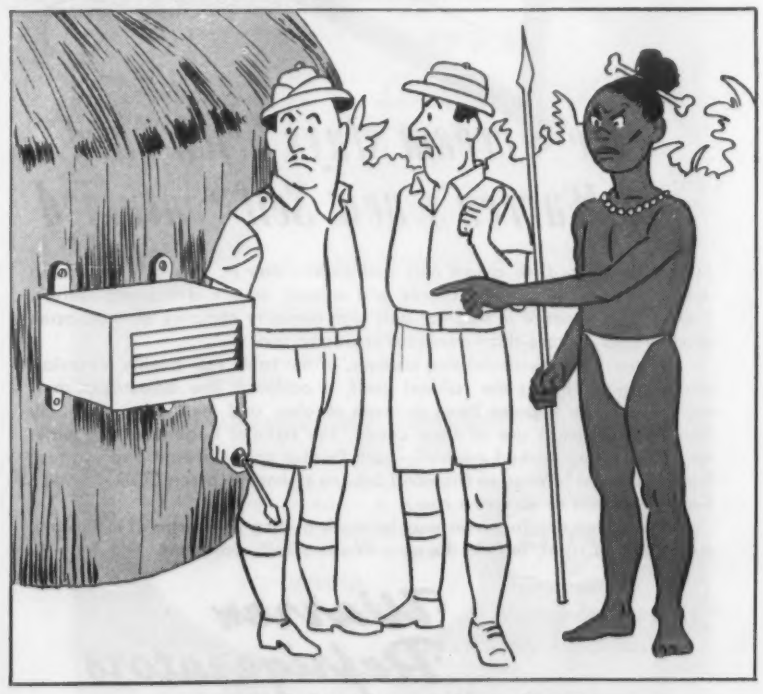
saves in balancing air conditioning, heating and ventilating systems

The Model 60 Anemotherm Air Meter, developed by the Anemostat Corporation of America, gives you — *in one convenient instrument* — a simple, rapid method of balancing and checking any air system. It puts at your fingertips, by means of *color-coded* pushbuttons, air velocity, air temperature and static pressure. • The Anemotherm Air Meter pays for itself through time saved on only one major job. **Write for Bulletin 55 giving all the facts.**

AC 1338

ANEMOSTAT CORPORATION OF AMERICA
10 EAST 39th STREET, NEW YORK 16, N. Y.

WIN A PRIZE! Send your cartoon suggestions on the subject of "Genetron" Super-Dry Refrigerants to: "Genetron" Dept., General Chemical Division, Allied Chemical & Dye Corporation, 40 Rector Street, New York 6, N. Y. WE WILL PAY $10 for every cartoon idea used and print your name and address.



The chief doesn't want it unless it uses **genetron**® *Super-Dry Refrigerant!*

For reliability in refrigeration and air conditioning equipment—look to VILTER!

With the Vilter line you will find reliability an accepted byword nationally. Thousands of satisfied customers will stand up for Vilter equipment's dependable service; long life; efficient, economical performance—equipment backed by ninety years of intense activity in engineering, research, and installation know-how in the refrigeration and air conditioning industry.

With the versatile Vilter line you can handle practically any commercial and industrial refrigeration and air conditioning application in your area on an attractive competitive basis. Included in the Vilter line are ammonia and Freon compressors from 10 HP to 200 HP and larger, booster compressors, condensers, blast freezers, Uni-Chillers, brine coolers, heat exchangers, Pakicers, Polarflake ice machines, latent heat storage systems, Vertibay coils, water coolers, shell and tube vessels, air conditioners, Zer-O-Disc fin coils, and rotary liquid pumps among others. Vilter supplies equipment to the dairy, brewery, food, fishing, meat packing, canning, chemical, and vegetable processing industries; also for stores, churches, office buildings, and industrial plants.

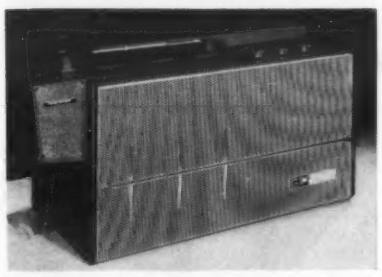
Vilter distributors receive strong home office support. Engineering application counsel is always available. Field tests are conducted regularly to try new applications . . . to suggest installation improvements. The Vilter line is advertised widely in the trade press with distributor applications being featured.

It will pay you to consider the Vilter line for your area. Why not get acquainted? You will like our way of doing business. For full information write to Department G, The Vilter Manufacturing Company, 2217 South First Street, Milwaukee 7, Wisconsin.

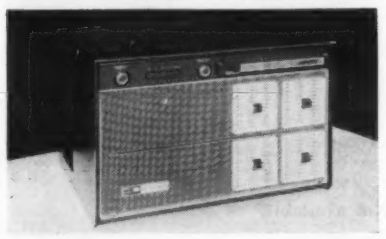
Vilter®
REFRIGERATION and AIR CONDITIONING

THE VILTER MANUFACTURING COMPANY, Milwaukee 7, Wis.
Ammonia & Freon Compressors • Pakice & Polarflake Ice Makers • Ammonia Liquid Transfer Systems • Evaporative & Shell Tube Condensers • Pipe Coils • Valves & Fittings

For more information about products advertised on this page use Information Center, page 16.



"BANTAM" 1-hp. Philco room air conditioner with "Ionitron" negative ion generator installed is shown above. The Ionitron generator is an accessory.



"COMPACT" 1958 room air conditioner by Philco is shown with "Ionitron" negative ion generator.

Philco Units--

(Concluded from Page 1, Col. 4)

tively ionized air not only brings relief to air-borne allergy sufferers, but also gives a feeling of well-being."

In addition to discharging negative ions into the room, the electrical charge used to create negative ions also acts as an electronic dust magnet to filter out microscopic dust particles.

The negative ion charge gives the minute dust particles a negative charge and such dust particles are then attracted to a grounded filter.

THREE 1-HP. UNITS

The three new Bantam models are 1-hp. capacity. Two are for 115-volt installations and one for 230-volt installation. They are identical in size, each being 12⅞ in. high, 24¾ in. wide, and 12⅞ deep.

The Bantam models are of all steel construction, and can be installed by the average handyman with a standard installation kit. Other features include a "take-home" chassis, thermostat, fresh air ventilation, two-speed fan, adjustable top-mounted grilles, and easy access filter.

TWO HEAT PUMP UNITS

The Compact line of heavy-duty air conditioners is available in 1 hp., 1½ hp., and 2-hp. models. Two are reverse cycle heat pump air conditioners. All models are the same size, 27 in. wide, 16½ in. high, and 21¼ in. deep. They are file drawer construction which means the chassis can be removed without removing wrap-around cabinet.

Other features in this series are, thermostat, push-pull balanced ventilation, 4-way adjustable grilles, push-pull fresh air and pump out control, wall-to-wall cooling, pushbutton control, two-speed fan, whisper air circulator, flush mounted cabinets, easy access filter, and body band installation seal which eliminates sill brackets.

Suggested list prices are:

BANTAM SERIES

A-983-2	1 hp.	115 V.-7½ amp.	$299.95
A-984-2	1 hp.	115 V.-12 amp.	299.95
A-984-11	1 hp.	230 V.	299.95

COMPACT SERIES

Model No.	Hp.	Volts	Amps.	Price
A-1082-2	1	115	12	$269.95
A-1082-23	1	208/230		269.95
A-1083-2	1	115	7½	299.95
A-1282-2	1	115	12	319.95
A-1282-11	1	230		319.95
A-1582-11	1½	230		349.95
A-2082-11	2	230		399.95
A-1086-2	1	115	12	
Reverse Cycle Heat Pump				299.95
A-1080-11	1	230		
Reverse Cycle Heat Pump				299.95

Table 1

Air Conditioning Equipment and Components for Air Conditioning and Refrigeration Equipment: Quantity and Value of Shipments by Class of Product, 1956 and 1955

(Value Figures In Thousands of Dollars)

Class of Product	1956 No.	1956 Value	1955* No.	1955* Value
Condensing units (except for household refrigerators), total	619,922	82,290	589,335	71,067
Refrigerants (except ammonia), total	619,864	82,170	589,251	70,913
Air-cooled	550,301	55,146	523,200	46,050
Water-cooled	69,563	27,024	66,051	24,863
Ammonia refrigerants	58	120	84	154
Compressors and compressor units (except for household refrigerators), total	3,780,931	166,220	2,554,031	116,917
Refrigerants (except ammonia)	3,778,823	160,753	2,551,442	109,913
Ammonia refrigerants	2,108	5,467	2,589	7,004
Heat transfer equipment, total	xxx	146,486	xxx	114,064
Evaporative condensers	5,712	10,203	5,883	9,597
Air conditioning units not self-contained	173,345	43,010	126,087	30,361
Unit coolers, refrigeration	96,754	16,292	97,034	15,053
Other heat transfer equipment	xxx	76,981	xxx	59,053
Packaged air conditioning equipment, total	xxx	494,028	xxx	369,862
Room air conditioners, total	1,828,047	291,445	1,283,234	209,961
Window-sill type	1,818,908	289,017	1,268,161	206,172
Other than window-sill type	9,139	2,428	15,073	3,789
Self-contained air conditioners (except units intended for residences and except window-sill type)	86,378	98,928	81,880	87,953
Year-round air conditioners, self-con.	18,390	16,890	21,621	21,378
Residential-type, self-contained air conditioners, except room air conditioners without furnace), 2 tons and over	50,109	22,471	35,815	17,978
Refrigeration chassis for air conditioning (without fan section and furnace)	10,529	5,700	19,664	9,155
Air conditioning units, remote condenser-type (split systems)	95,200	58,594	37,881	23,437
Other air conditioning and refrigeration equipment, total	xxx	115,200	xxx	93,312
Centrifugal refrigeration systems	921	29,105	818	25,732
Absorption and adsorption systems and equipment	1,842	9,245	1,738	5,023
Ice making machines	31,416	18,112	31,521	16,369
Packaged liquid chillers	4,215	12,754	2,392	7,534
Mechanical dehumidifiers, refrigerated type, self-contained	148,147	9,358	76,009	5,089
Mechanical drinking water coolers	137,012	19,427	128,304	18,688
Factory assembled water cooling towers	44,548	17,199	41,091	14,877

*Revised. xxxNot applicable.

Table 2

Condensing Units: Quantity and Value of Shipments, 1956 and 1955

(Value Figures In Thousands of Dollars)

Product	No. of Companies Reporting	1956 Shipments No.	1956 Shipments Value	1955* Shipments No.	1955* Shipments Value
Condensing units (except for household refrigerators), total	xxx	619,922	82,290	589,335	71,067
All refrigerants (except ammonia), total	xxx	619,864	82,170	589,251	70,913
Air-cooled, total	xxx	550,301	55,146	523,200	46,050
Open-type, total	17	41,473	8,477	42,717	7,819
¼ hp. and under	10	4,249	275	5,732	355
⅓ hp.	11	6,938	546	8,142	677
½ hp.	12	7,372	761	7,711	817
¾ hp.	13	4,794	667	4,941	721
1 hp.	13	3,745	677	4,441	833
1½ hp.	14	2,996	967	3,091	786
2 hp.	15	4,982	1,664	3,943	1,172
3 hp.	14	5,493	2,087	4,621	1,761
5 hp.	4	114	75	95	197
Over 5 hp.	5	790	758		
Hermetic type, total	27	508,828	46,669	480,483	38,731
⅛ hp. and under	9	89,479	4,038	75,330	3,553
¼ hp.	13	157,131	10,282	158,652	9,981
⅓ hp.	13	103,053	6,600	107,823	6,722
½ hp.	16	61,165	5,074	61,138	5,186
¾ hp.	10	27,188	2,840	26,882	2,800
1 hp.	14	22,853	3,204	20,464	2,856
1½ hp.	10	18,972	3,844	14,790	3,125
2 hp.	14	15,166	4,920	9,302	2,320
3 hp.	13	11,446	4,274	6,102	2,188
5 hp. and over	6	2,375	1,593		
Water-cooled, total	xxx	69,563	27,024	66,051	24,863
Open-type, total	19	20,309	13,257	22,634	12,663
⅛ hp. and under	4	141	18	185	24
½ hp.	7	1,114	148	1,337	169
¾ hp.	7	1,488	234	1,695	287
1 hp.	11	1,524	309	2,360	486
1½ hp.	11	2,135	570	2,781	724
2 hp.	10	2,338	691	3,231	962
3 hp.	11	3,124	1,213	3,298	1,243
5 hp.	12	3,452	2,001	3,266	1,899
7½ hp.	10	917	709	832	608
10 hp.	10	981	962	865	866
15 hp.	11	795	999	697	896
20 hp.	10	531	913	540	847
25 hp.	9	424	836	375	637
30 hp.	11	367	700	284	554
40 hp.	9	346	787	415	956
50 hp.	8	230	646	198	511
60 hp.	8	177	531	100	318
75 hp.	6	122	423	94	335
Over 75 hp.	6	103	567	81	341
Hermetic-type, total	19	49,254	13,767	43,417	12,200
½ hp. and under	8	4,962	564	4,665	532
¾ hp.	8	3,955	542	3,911	555
1 hp.	10	6,624	1,096	5,693	966
1½ hp.	10	6,920	1,607	5,496	1,268
2 hp.	17	9,005	2,636	8,049	2,338
3 hp.	14	11,572	4,218	10,034	3,785
5 hp.	11	4,844	2,273	4,564	2,135
7½ hp. and over	8	1,372	831	1,005	621
Ammonia refrigerants, total	5	58	120	84	154
5 hp. and under	4	17	16	32	27
7½ hp.	....	....	....	....	....
10 hp.	5	41	104	17	30
15 hp.					
20 hp. and over				35	97

*Revised. xxxNot applicable.

'56 Census Report--

(Continued from Page 1)

based on reports received by the Bureau from all known manufacturers of these products. The figures represent completed sales of equipment; that is, units actually billed and shipped. Dollar values are manufacturers' net billing prices, f.o.b. factory.

Table 1 presents a summary of the quantity and value of shipments by class of product. Table 2 gives this data for condensing units, table 3A for compressors and compressor bodies, table 4 for heat transfer equipment, table 5 for packaged air conditioning equipment, and table 6 for other air conditioning and refrigeration equipment.

Table 3B details the number of compressor bodies assembled.

New this year in tables 3A and 3B are statistics on auto air conditioning compressors. Shipments totaled 283,583 compressors with a dollar volume of $16,370,000.

In 1956, manufacturers shipments of packaged air conditioning equipment totaled $494 million, a gain of 33.5% in dollar volume over 1955. Residential air conditioners led the way with a unit gain of 51.5%. Room air conditioners scored a 43.4% unit increase and packaged commercial units were up 5.5%.

Room Unit Shipments

The Bureau's figures showed 1,828,000 room air conditioners sold in 1956 as compared with 1,283,000 in 1955. Value rose from $210 million to $291 million.

The big gain in residential systems was attributable to split systems, which totaled 96,754 units, up 151% over 1955. Heat pumps recorded a 33% gain and self-contained units a 40% increase.

Add-on units (without fan section and furnace) dropped 46% and year-round systems complete with furnace dropped by 25%.

Percentage of the total number of residential systems shipped represented by each type of equipment for 1955 and 1956 is shown below:

	1956	1955
Year-Round Complete with Furnace	7.8%	15.7%
Heat Pumps	2.7%	3.1%
Self-Contained	28.8%	31.1%
Add-On (without fan section)	6.1%	17.1%
Split System	54.6%	33.0%
	100.0%	100.0%

Room unit shipments for 1956 were highlighted by strong gains in larger horsepower sizes, while the smaller sizes—⅓ and ½ hp.—dwindled. Units of 2 hp. and over increased 473%. The ¾-hp. units led in units gained with an increase of 309,024 units.

Percentage of total room unit shipments by size for 1956 and 1955 follow:

Hp.	1956	1955
⅓	.1%	1.3%
½	5.0%	10.1%
¾	45.5%	40.9%
1	34.1%	37.2%
1½	9.9%	9.1%
2 and over	5.4%	1.4%
Total	100.0%	100.0%

Packaged commercial unit shipments, while gaining only 5.5%, offset a drop of 1,469 units in the 2, 3, and 5 hp. sizes with strong increases in all of the larger sizes so that total dollar value rose 12.4% to $98,928,000.

Percentage of total commercial packaged unit shipments by size for 1956 and 1955:

Hp.	1956	1955	Percentage Unit Gain over 1955
2	3.2%	3.5%	- 3.7
3	17.5%	19.8%	- 6.9
5	31.5%	33.5%	- 0.9
7½	24.3%	23.3%	9.9
10	11.5%	10.4%	17.3
15	8.3%	7.2%	21.6
20	2.0%	1.4%	54.3
25	.7%	.5%	33.0
30	.7%	.2%	247.2
over 30	.3%	.2%	86.4

Other air conditioning equipment also did well:

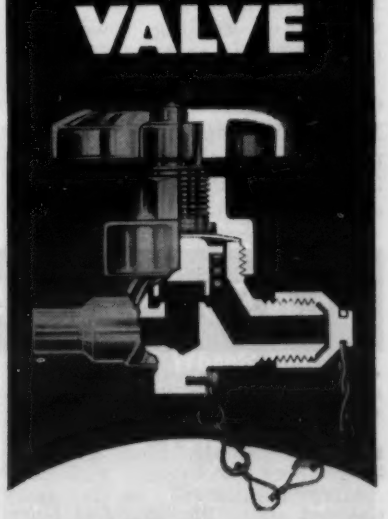
Packaged liquid chillers were up 76.2% to 4,215 units.

Air conditioning units not

(Concluded on next page)

Precision Designed for REFRIGERATION and AIR CONDITIONING SYSTEMS

THE NEW KEROJET CHARGE, PURGE and DRAIN VALVE



- Costs Less
- Full open height only 2¼"
- Seal cap with chain attached
- 2½" diameter handwheel, colored for easy identification

Designed for ease of operation, this new valve features compact packless diaphragms of beryllium copper and stainless steel, for maximum resistance to wear. Rugged forged brass body has integral mounting flange. Maximum operating pressure, 500 p.s.i. Maximum temperature, 200° F. Connection size inlet ⅜" solder connection—outlet ⅜" male flare. See your Kerotest wholesaler today.

Ask for No. R224X1

KEROTEST

KEROTEST MANUFACTURING CO.
2502 Liberty Avenue
Pittsburgh 22, Pa.

Shipments--

(Concluded from preceding page)

self contained were up 37.5% to 173,345 units.

Centrifugal refrigeration systems were up 12.6%, while absorption and adsorption systems rose 6% in number and 84% in dollar volume.

On the refrigeration side, unit coolers declined in units .3%, while dollar volume rose 8%.

Ice makers also declined .3% in units, while dollar volume rose 10.6%.

Mechanical drinking water cooler shipments rose 6.8% over 1955 to 137,012 units.

Mechanical dehumidifier shipments almost doubled, totaling 148,147 units up 94.9% over 1955.

Cooling tower shipments were up 8.4% over 1955. Mechanical draft units were down slightly, .5%, and natural draft towers were up 84.3%.

Here's the percentage breakdown by size of mechanical draft towers for 1956 and 1955.

Size	1956	1955	Percentage of Units Gained over 1955
5 tons and under	33.8%	43.3%	-22.1%
5.1 - 20 tons	44.6%	40.5%	9.4%
20.1 tons and over	21.6%	16.2%	32.1%

No unit volume is given for air cooled condensers, but dollar volume increased 24.6% over 1955 to $9,073,000, while dollar volume on cooling towers increased 15.6% to $17,199,000.

Condensing unit shipments hit 620,000 units, up 5.2% over 1955 and compressor and compressor unit shipments totaled 3,780,931 units, a 48.1% increase over 1955.

Table 3A—Compressors and Compressor Units: Quantity and Value of Shipments, 1956 and 1955

(Value Figures In Thousands of Dollars)

Product	1956 No. of Companies Reporting	1956 Shipments of Complete Units No.	1956 Shipments of Complete Units Value	1955* Shipments of Complete Units No.	1955* Shipments of Complete Units Value
Compressors and compressor units (except for household refrigerators), total	xxx	3,780,931	166,220	2,554,031	116,917
Refrigerants, (except ammonia), total	xxx	3,778,823	160,753	2,551,442	109,913
20 hp. and under hermetic-type motor-compressors and/or power units, total	11	3,451,294	127,332	2,394,398	90,401
3 hp. and under	11	3,414,282	120,024	2,373,498	86,214
5 hp.	9	28,361	4,857	17,218	3,167
7½ hp. and over but not over 20 hp.	8	8,651	2,451	3,682	1,020
20 hp. and under open-type compressors (with or without motors), total	15	38,760	7,073	152,246	10,725
¼ hp. and under	5	6,768	167	4,500	112
⅓ hp.	5	2,762	86	2,900	85
½ hp.	5	6,023	210	6,177	259
¾ hp.	5	1,988	92	2,020	111
1 hp.	6	2,327	137	17,435	797
1½ hp.	4	1,366	106	23,353	876
2 hp.	7	3,658	291	86,573	3,769
3 hp.	8	3,496	364		
5 hp.	8	3,388	900	3,273	961
7½ hp.	8	1,664	465	1,755	504
10 hp.	11	1,551	1,140	1,793	1,015
15 hp.	12	1,755	1,391	1,109	992
20 hp.	11	2,014	1,724	1,358	1,244
Over 20 hp., total	10	5,186	9,978	4,798	8,787
Over 20 but not over 25 hp.	10	988	1,290	876	1,105
30 hp.	9	964	1,299	1,294	1,672
40 hp.	10	1,083	1,656	726	1,180
50 hp.	9	692	1,454	586	1,190
60 hp.	9	711	1,561	631	1,416
75 hp.	9	343	945	244	684
100 hp.	8	278	1,033	307	1,028
Over 100 hp.	5	127	740	134	512
Ammonia refrigerants, total	9	2,108	5,467	2,589	7,004
5 hp. and under	7	99	62	136	75
7½ hp.				23	22
10 hp.	8	163	156	182	170
15 hp.	6	106	139	150	200
20 hp.	7	240	349	238	328
25 hp.	4	206	344	191	306
30 hp.	8	192	428	280	589
40 hp.	7	280	592	338	738
50 hp.	7	203	567	239	642
60 hp.	5	247	752	289	842
75 hp.	6	104	385	184	686
100 hp.	7	129	561	136	767
101-200 hp.	6	107	673	174	1,052
201 hp. and over	4	32	459	29	587
Automotive air conditioning compressors open-type (with or without motor)	4	283,583	16,370	n.a.	n.a.

*Revised xxxNot applicable. n.a. Not available.

Table 3B—Compressor Bodies: Number Assembled, 1956 and 1955

Product	No. of Companies Reporting 1956	Number of Units 1956	Number of Units 1955*
Compressor bodies (except for household refrigerators), total	xxx	5,023,465	n.a.
Refrigerants, except ammonia, total	30	4,737,495	3,803,126
⅙ hp. and under	9	678,646	471,223
¼ hp.	15	794,605	856,576
⅓ hp.	16	323,485	400,542
½ hp.	16	490,047	272,383
¾ hp.	14	749,148	560,032
1 hp.	12	951,833	599,897
1½ hp.	12	397,793	218,213
2 hp.	16	70,044	167,365
3 hp.	18	112,692	115,346
5 hp.	19	93,652	84,544
7½ hp.	16	45,895	35,578
10 hp.	16	13,566	8,306
15 hp.	14	4,002	3,127
20 hp.	11	2,940	2,128
25 hp.	10	1,884	1,656
30 hp. and over	13	7,263	6,210
Ammonia refrigerants, total	12	2,387	2,516
Automotive air conditioning, total	5	283,583	n.a.

*Revised. xxxNot applicable. n.a. Not available.

Table 4—Heat Transfer Equipment: Quantity and Value of Shipments, 1956 and 1955

(Value Figures In Thousands of Dollars)

Product	1956 No. of Companies Reporting	1956 Quantity No. of Units	1956 Value	1955* Quantity No. of Units	1955* Value
Heat transfer equipment, total.	xxx	xxx	146,486	xxx	114,055
Evaporative condensers, total.	28	5,712	10,203	5,883	9,597
5 tons and under	14	333	146	486	203
5.1-7.5 tons	14	170	92	138	76
7.6-10 tons	17	239	170	321	228
10.1-15 tons	20	608	516	563	503
15.1-20 tons	19	521	545	523	515
20.1-30 tons	20	1,046	1,322	1,016	1,190
30.1-50 tons	21	1,231	2,179	1,283	2,101
50.1-100 tons	19	1,302	3,769	1,334	3,686
Over 100 tons	11	262	1,464	219	1,095
Air conditioning units not self-contained, total	36	173,345	43,010	126,087	30,361
Suitable for location below a window, total	xxx	125,405	12,975	94,196	9,211
Motor-driven-fan type	20	82,483	9,539	58,612	6,196
Induced-air type	5	42,922	3,436	35,584	3,015
All other, total	xxx	47,940	30,035	31,891	21,150
3 tons and under	32	18,038	2,248	9,321	1,538
3.1-5 tons	26	7,309	2,175	4,083	1,571
5.1-10 tons	26	7,379	4,179	6,830	3,816
10.1-25 tons	25	8,157	8,555	6,475	6,145
25.1-50 tons	19	5,064	7,921	4,029	5,609
Over 50 tons	14	1,993	4,957	1,153	2,471
Unit coolers, refrigeration, total	xxx	96,754	16,292	97,034	15,053
Ceiling and wall mounted types, total	26	94,947	12,804	95,325	11,527
1,000 B.t.u./hr. and under	9	9,306	297	4,695	132
1,001-2,000 B.t.u./hr.	10	14,533	580	25,109	895
2,001-4,000 B.t.u./hr.	16	19,913	1,135	16,413	1,292
4,001-6,000 B.t.u./hr.	15	10,868	1,076	10,885	1,327
6,001-8,000 B.t.u./hr.	15	9,791	1,273	8,738	1,318
8,001-12,000 B.t.u./hr.	16	14,798	2,818	12,194	1,965
12,001-18,000 B.t.u./hr.	15	6,435	1,395	8,821	1,816
Over 18,000 B.t.u./hr.	20	9,303	4,230	8,470	2,782
Floor-mounted dry-type, total	12	1,311	1,981	1,235	2,224
5 tons and under	9	167	163	114	92
5.1-7.5 tons	11	365	456	338	504
7.6-10 tons	10	274	301	201	264
10.1-15 tons	12	255	399	239	456
Over 15 tons	9	250	662	343	908
Floor-mounted spray type, total	7	496	1,507	474	1,302
7.5 tons and under	4	48	62	43	42
7.6-10 tons	6	328	1,094	276	872
10.1-15 tons	5	73	184	98	216
Over 15 tons	4	47	167	57	172
Other heat transfer equipment, total	78	xxx	76,981	xxx	59,053
Shell-and-tube and shell-and-coil condensers	20	xxx	5,074	xxx	5,712
Shell-and-tube liquid coolers	11	xxx	3,833	xxx	3,549
Shell-and-coil liquid coolers.	6	xxx	638	xxx	670
Fin coils (except forced-air units and bunker-gravity type refrigeration coils), total	xxx	xxx	45,677	xxx	29,906
Steam	24	xxx	9,513	xxx	6,923
Water	24	xxx	7,753	xxx	5,015
Direct expansion	34	xxx	28,411	xxx	17,968
Plate-type evaporators (including bunker-gravity type refrigeration coils)	16	xxx	8,133	xxx	7,702
Surface dehumidifiers	9	xxx	2,189	xxx	1,548
Air-cooled condensers	23	xxx	9,073	xxx	7,277
Tube-in-tube liquid coolers, tube-in-tube condensers and suction-line heat exchangers	9	xxx	2,364	xxx	2,689

*Revised. xxxNot applicable.

(Concluded on next page)

CLASSIFIED ADVERTISING

RATES for "Positions Wanted" $7.50 per insertion. Limit 50 words. 15¢ per word over 50.

RATES for all other classifications $10.00 per insertion. Limit 50 words. 20¢ per word over 50.

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POSITIONS WANTED

EXECUTIVE—ENGINEERING and/or manufacturing. Mechanical engineer with 23 years' experience in designing and manufacturing of heating, cooling, ventilation, air conditioning and refrigeration products and associated components. Familiar with all phases of manufacturing and production functions including processing, tooling, material and production control, procurement, personnel and accounting. 10 years of plant management experience in fast growing concerns. Prefer small or medium sized operation with potential and resources for expansion. BOX A5923, Air Conditioning & Refrigeration News.

HAVE LICENSE—Will travel. Detroit and vicinity including Pontiac. Unlimited Detroit Refrigeration license. Can set you up for installation and service. Of special interest to heating contractors who wish to branch out into the cooling field. May be able to swing major store fixture franchise over to you. Write BOX A5931, Air Conditioning & Refrigeration News.

POSITIONS AVAILABLE

SALES ENGINEER: Excellent opportunity in expanding OEM sales department of well known manufacturer of control valves and devices. Engineering education desirable. Development or application experience in refrigeration, air conditioning, or heating essential. In reply state education, experience, earnings, personal data. Interviews arranged with qualified applicants. Replies held in confidence. BOX A5916, Air Conditioning & Refrigeration News.

AIR CONDITIONING and refrigeration sales engineer to represent leading wholesaler in selling very complete line of equipment, up to 100 tons, to the contractor. Complete knowledge of estimating air conditioning and refrigeration loads necessary. New York, Brooklyn, Long Island territory. Good salary, expenses, bonus. Write BOX A5926, Air Conditioning & Refrigeration News.

ENGINEERING LABORATORY Supervisor. Engineering education desirable. Experience to qualify for the position of supervisor of engineering laboratory for manufacturer of automatic refrigerant control devices. Interesting and challenging work in an expanding field. Employee benefits include hospitalization, insurance and retirement plan. Midwest location. Employees know of this opportunity. Reply in confidence giving details of education, experience, salary requirements, age and marital status. BOX A5927, Air Conditioning & Refrigeration News.

REFRIGERATION AND heating serviceman wanted: Must have ten years' experience in service and installation of commercial refrigeration and heating. Applicants should be qualified to supervise a complete installation. Year round work, paid vacations, other benefits. State qualifications, experience, age, etc., in letter. Well established firm in Middle West. BOX A5928, Air Conditioning & Refrigeration News.

MANUFACTURERS REPRESENTATIVES to sell condenser and relay line for air conditioning and refrigeration. Must have following among refrigeration supply wholesalers and jobbers. Territories open: East of Mississippi River—Western Pennsylvania, Ohio, Wisconsin, Illinois, Indiana, and Michigan. West of Mississippi River—all states except Arkansas and Louisiana. Reply to BOX A5932, Air Conditioning & Refrigeration News.

SUBSTANTIAL MANUFACTURER of refrigeration products has just acquired manufacturing rights to a line of residential air conditioners of proven performance from a small company. We are seeking manufacturers representatives for distribution of these units consisting of both remote and packaged 2-HP and 3-HP air cooled models. Units will be attractively priced and include a liberal commission. Reply to BOX A5933, Air Conditioning & Refrigeration News.

EQUIPMENT WANTED

WANTED: MANUFACTURERS surplus, outdated or obsolete refrigeration items—expansion & water & shutoff valves, controls, relays, dehydrators, units, tubing, fittings, etc. All sales on a cash close-out basis, large or small quantity. Write or call: COMMERCIAL CONTROLS CO., 257 East 3rd Street, New York 9, N. Y., ORegon 3-7210.

WANTED: USED ice machines, preferably Scotsman flaker & cubers. In reply state model, year, serial, condition, and asking price. Can use one or fifty. WATER EQUIPMENT COMPANY INC., phone RE 7-5377, 4602 North Dale Mabry, Tampa, Florida.

EQUIPMENT FOR SALE

CENTRAL HOME air conditioners: 1½ H.P.—$165.00 F.O.B. York, Pennsylvania. Self contained, air cooled condenser, completely assembled and wired. Cooling capacity—15,750 B.T.U. per hour. New in original crates. Quantities limited. Write or phone today. Wm. A. Hewett, YORK-SHIPLEY, INC., York, Pennsylvania, Phone: 7871.

MISCELLANEOUS

WANTED—PRODUCTS to sell. Large manufacturer of refrigeration equipment will accept exclusive sale of meritorious products in restaurant and refrigeration field. We have a thoroughly trained sales personnel now serving 150 distributors throughout the United States. This is an excellent opportunity for manufacturers to acquire a ready made sales organization with established connections. Must be exclusive representation. We invite correspondence. Write to ALVIN D. ROSE, 2518 W. Montrose Ave., Chicago 18, Ill.

ATTENTION SERVICEMEN: Send for free circulars and bulletins on refrigeration parts and equipment. Real money saving values: WALTER W. STARR, 2833 Lincoln Avenue, Chicago 13, Illinois.

TODAY'S OUTSTANDING AIR CONDITIONING ACCESSORY

— • —

KESCO CONDENSATE PUMPS

Featuring FLOOD CONTROL

— • —

Wholesalers write to

KESCO JAMAICA 13, N.Y.

Controls Co. of America Starts on New Plant

SCHILLER PARK, Ill.—Controls Co. of America announced the breaking of ground at Crystal Lake, Ill., for a new 20,000-sq. ft. light manufacturing plant to house expanded operations of its wholly owned subsidiary, Lake City, Inc.

Louis Putze, president, said the plant is expected to be completed and operating early in 1958.

For more information about products advertised on this page use Information Center, page 16.

Table 5—Packaged Air Conditioning Equipment: Quantity and Value of Shipments, 1956 and 1955

(Value Figures In Thousands of Dollars)

Product	1956 No. of Companies Reporting	1956 Quantity No. of Units	1956 Value	1955* Quantity No. of Units	1955* Value
PACKAGED AIR CONDITIONING EQUIPMENT, TOTAL..	xxx	xxx	494,028	xxx	369,862
Room air conditioners, total..	xxx	1,828,047	291,445	1,283,234	209,961
Window-sill type, total.....	39	1,818,908	289,017	1,268,161	206,172
⅓ hp.	6	897	95	17,762	1,709
½ hp.	22	90,552	11,641	127,485	16,023
¾ hp.	32	827,520	120,055	518,496	74,875
1 hp.	31	620,986	102,039	471,200	83,302
1½ hp.	21	180,752	34,801	116,087	25,344
2 hp. and over	16	98,201	20,386	17,131	4,919
Except window-sill type, total	6	9,139	2,428	15,073	3,789
Under 1 hp.	5	5,474	1,261	8,341	1,691
1 hp.	5	3,665	1,167	4,334	1,203
1.5 hp.				2,398	895
Self-contained air conditioners (except units intended for residences and except window-sill types), total....	38	86,378	98,928	81,880	87,953
2 tons	23	2,775	1,642	2,822	1,807
3 tons	36	15,127	9,328	16,250	10,008
5 tons	37	27,171	23,992	27,410	22,809
7½ tons	27	21,001	23,503	19,112	22,094
10 tons	24	9,963	15,341	8,497	12,864
15 tons	19	7,190	14,895	5,915	12,242
20 tons	16	1,734	4,759	1,124	3,184
25 tons	13	605	1,971	455	1,617
30 tons	11	566	1,950	163	621
Over 30 tons	9	246	1,547	132	707
Year-round air conditioners, self-contained, total	xxx	18,390	16,890	21,621	21,378
Except heat pumps (complete with furnace).....	14	13,644	11,294	18,070	16,025
Heat pumps (except room air conditioners)	7	4,746	5,596	3,551	5,353
Residential-type, self-contained, air conditioners, except room air conditioners (without furnace) 2 tons and over....	42	50,109	22,471	35,815	17,978
Refrigeration chassis for air conditioning (without fan section and furnace).....	15	10,529	5,700	19,664	9,155
Air conditioning units, remote condenser type (split systems)	32	95,200	58,594	37,881	23,437

*Revised. xxxNot applicable.

Table 6—Other Air Conditioning and Refrigeration Equipment: Quantity and Value of Shipments, 1956 and 1955

(Value Figures In Thousands of Dollars)

Product	1956 No. of Companies Reporting	1956 Quantity No. of Units	1956 Value	1955* Quantity No. of Units	1955* Value
OTHER AIR CONDITIONING AND REFRIGERATION EQUIPMENT, TOTAL	xxx	xxx	115,200	xxx	93,312
Centrifugal refrigeration systems, total	5	921	29,105	818	25,732
Water chilling above 32° F., total	5	889	27,531	779	23,795
200 hp. and under.....	5	342	6,727	325	5,971
201-300 hp.	5	246	7,044	163	4,527
301-400 hp.	5	97	3,193	89	2,467
401-500 hp.	4	61	2,325	55	1,861
Over 500 hp.	4	143	8,242	147	8,969
Brine chilling (below 32° F.)	3	32	1,574	39	1,937
200 hp. and under.....	3	4	77	9	341
201-300 hp.	3	5	149	7	200
301 hp. and over.....	3	23	1,348	23	1,396
Absorption and adsorption systems and equipment.....	6	1,842	9,245	1,738	5,023
Ice-making machines, total...	xxx	31,416	18,112	31,521	16,369
Self-contained, total	xxx	30,491	17,037	30,534	15,537
Ice cube makers, total.....	16	23,313	12,185	23,535	11,493
Automatic, 250 lbs. & under	7	15,079	6,151	15,921	6,406
Automatic, over 250 but not over 500 lbs.....	7	7,363	5,422	6,580	4,253
All others	6	871	612	1,034	834
Flake or chip machines....	4	7,178	4,852	6,999	4,044
Not self-contained	11	925	1,075	987	832
Packaged liquid chillers	11	4,215	12,754	2,392	7,534
Mechanical dehumidifiers, refrigerated-type, self-contained	7	148,147	9,358	76,009	5,089
Mechanical drinking water coolers	7	137,012	19,427	128,304	18,688
Factory-assembled water-cooling towers, total	xxx	44,548	17,199	41,091	14,877
Mechanical-draft type, total	33	36,570	16,139	36,763	14,207
5 tons and under.....	28	12,382	2,039	15,892	2,551
5.1-20 tons	30	16,305	5,180	14,905	4,429
20.1 tons and over.....	30	7,883	8,920	5,966	7,227
Natural-draft type	16	7,978	1,060	4,328	670

*Revised. xxxNot applicable.

Lehigh Selling Lancaster, Pa. Plant

LANCASTER, Pa. — Lehigh, Inc., manufacturer of refrigeration compressors and condensing units, announced that it had appointed the national industrial realtor firm of Frank G. Binswanger, Inc., with offices in Philadelphia, New York City, and South Carolina, as real estate agent for the sale of its one-story plant at 143 Fountain Ave. here.

The property, containing approximately 65,000 sq. ft. of floor space, is of brick, steel, and glass construction, with reinforced concrete floors. The plant is fully sprinklered, and draws its water supply from two artesian wells.

Office facilities occupy two areas, one covering 960 sq. ft., and the other, 1,430 sq. ft. All the office areas are entirely air conditioned.

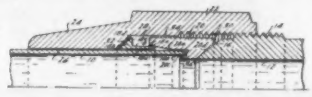
There is a 300-ft. Pennsylvania Railroad siding along the building at car floor height. The property also offers three 12-ft. tailgate loading docks, one of which is under cover.

Included in the offering are approximately 11 acres of ground, of which the buildings occupies 1½ acres, according to the announcement.

PATENTS

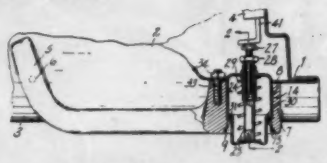
Week of Sept. 24 (Continued)

2,807,481. COMPRESSION TUBE JOINT FOR FLARELESS RIGID TUBES. Benjamin A. Main, Jr., Rives Junction, Mich., assignor to Aeroquip Corp., Jackson, Mich.



A compression joint for the connection of a flareless rigid tube to a standard coupling adaptor having an external screw thread and a conical annular end wall comprising, in combination with said tube and adaptor, a coupling nut axially slidable upon said tube and having an internal screw thread at one end for engagement with the external screw thread of said adaptor, said nut being interiorly enlarged to define, with said adaptor, an annular recess surrounding the end portion of said tube in abutting relation to said adaptor, a conical wall of said nut defining an end wall of said recess, a first sleeve member axially slidable upon said tube end within said recess, said first sleeve member, prior to final assembly of the joint, having a cylindrical bore portion embracing said tube inwardly from its terminal end, an annular conical wall in opposed relation to said conical wall of said nut and of a more acute angle and a radial annular shoulder between said cylindrical portion and said conical wall of said sleeve, a second sleeve member having all around clearance within said recess, second sleeve member having a conical end wall engaging with said conical end wall of said adaptor, a second conical wall on said second sleeve member spaced axially inward from said conical end wall of said second sleeve member and defining a hook shaped ledge against which the terminal end portion of said tube end abuts with radial support. . . .

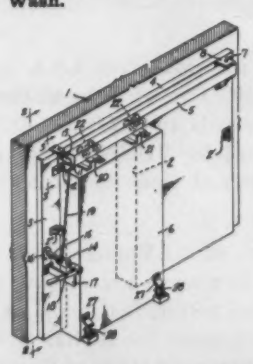
2,807,492. PUSH BUTTON DOOR HANDLE ADAPTED FOR USE ON DOORS OF AUTOMOBILES, REFRIGERATORS AND THE LIKE. Gerald V. Jakeway, Grand Rapids, Mich., assignor to Keeler Brass Co., Grand Rapids, Mich.



1. In combination, a door handle having a socket open at its ends, a keeper defined by an internal recess in the wall of said socket, there being an internal groove extending from the inner end of said socket and opening to said keeper defining recess and adapted to receive a detent disengaging tool, a push button assembly comprising a holder member slidable within said socket, said holder member having a detent engaging said keeper when the holder member is in seated position within the socket, a push button stem guide mounted on said holder member, a push button provided with a latch actuating stem slidable in said guide, and a push button biasing spring carried by said holder member.

Week of Oct. 1

2,807,836. INSULATED DOOR AND MOUNTING STRUCTURES THEREFOR. Frank W. Knowles, Seattle, Wash., assignor to Belt-Ice Corp., Seattle, Wash.

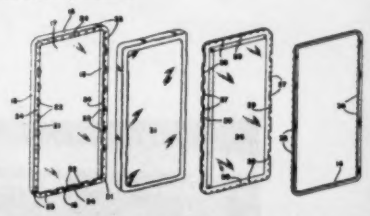


1. An insulated door and mounting structure comprising a doorway, a door, track means extending generally horizontally alongside the upper portion of the doorway, means supporting said door from and guided by said track means for sliding movement of said door between a position in registry with the doorway and an open position out of registry with the doorway, pivot means supporting the end of said track means remote from the doorway, a pin projecting lengthwise from the end portion of said track means adjacent to the doorway, bell crank means supporting said pin and operable to swing it between upward and outward and inward and downward positions to move the end of said track means adjacent to the doorway and the door downward and toward the doorway when the door is in registry with the doorway, and wedging means adjacent to the bottom of the door interengageable by such lowering movement of the door to move the lower portion of the door toward the doorway for sealing engagement therewith.

Editor's Note: Patents described here have been selected from the "Official Gazette" of the United States Patent Office. They offer only a brief summary of each invention. In some instances only the first part of the digest is presented.

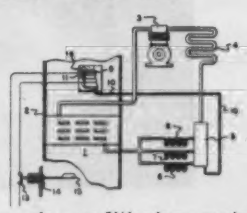
Printed copies of patents, reissued patents, and patent designs may be secured from the Patent Office; patents and reissues are 25¢ each, while designs are furnished at 10¢ each. Address orders to: Commissioner of Patents, Washington 25, D. C.

2,807,837. REFRIGERATOR CABINET DOOR. Keith K. Kesling, Dayton, Ohio, assignor to General Motors Corp., Detroit, Mich.



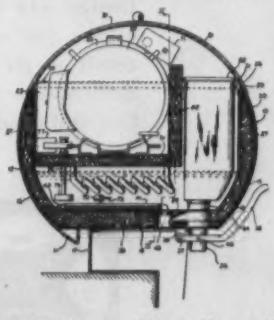
1. A door including an outer panel and an inner panel separate from said outer panel with insulating material disposed therebetween, one of said panels being formed to provide top, bottom, side walls and a face of said door, said top, bottom, and side walls of said one panel having an inwardly turned flange thereon, the edge of said flange being provided with spaced apart sets of slits and the material of said flange intermediate said slits of each set thereof being bent outwardly of the flange with respect to said door face to form anchoring tabs along at least two sides of said one panel, said flange also being provided with a plurality of apertures therein spaced apart therealong, the other of said panels being provided with spaced apart notches along at least two side marginal edges thereof, said other panel also being provided with a plurality of apertures spaced apart along its edges inwardly thereof. . . .

2,807,940. REFRIGERATION SYSTEM. Fred O. Urban, Verona, N. J., assignor to General Electric Co., a corporation of New York.



6. An air conditioning system including a closed refrigerant circuit including a compressor, a condenser, a liquid refrigerant receiver and an evaporator for conditioning a circulating air stream, a plurality of fixed restrictors in said circuit for controlling the flow of refrigerant to said evaporator and having inlets connected to said receiver at different elevations, a dead end liquid refrigerant storage chamber arranged outside the normal refrigerant circuit and having a connection with the high pressure side of said circuit for passage of refrigerant between said chamber and said circuit. . . .

2,807,941. DISPENSER. El Roy J. Kraft, Des Plaines, Ill., assignor to The Dole Valve Co., Chicago, Ill.



6. In a unitary refrigerating unit for beverage dispensers and the like, a deep tray having a bottom, parallel spaced side walls and flanges extending outwardly from the upper ends thereof, and adapted to form a support means for said tray in an ice tank or like device, compressing means carried within said tray between the side walls thereof, a stirrer for water carried by said tray and depending therefrom, evaporating and cooling means supported by said tray and depending therefrom, condensing means extending along opposite side walls of said tray in spaced relation with respect thereto and connected with said compressing means and said evaporating means, and control means for said compressing means depending from the bottom of said tray in the region of said evaporating and cooling means.

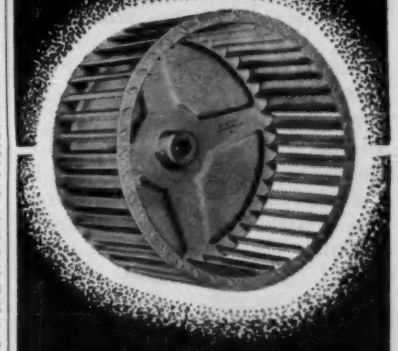
(To Be Continued)

Amana

REFRIGERATION, INC.

One of the Leading Air Conditioner Manufacturers using

REVCOR BLASTAIRE BLOWER WHEELS



The Blower Wheels that... Have more pressure and volume!

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AGA Symposiums--

(Concluded from Page 1, Col. 4)

nies to get interested, and to provide them with information on how to get into the air conditioning business.

Tentative Dates Of Symposiums

Tentative dates for the symposiums were reported by F. N. Seitz of Los Angeles, member of the AGA committee and vice president of sales and advertising for Southern Counties Gas Co.

New York City Jan. 15, Boston Jan. 17, Cleveland Jan. 28, St. Louis Feb. 4, Los Angeles Feb. 7, Dallas Feb. 12, and Birmingham, Ala. Feb. 14.

The Los Angeles symposium is for the territory covered by the Pacific Coast Gas Association: Arizona, British Columbia, California, Hawaii, Idaho, Nevada, Oregon, Utah, and Washington.

To Hold Another Meeting In Advance

Seitz said the AGA air conditioning promotion committee expects to have another meeting before the series of symposiums starts.

Two meetings had already been held, the first in New York City, the second in Dallas, when the symposium idea was advanced.

Members of the committee are:

Chairman W. W. Selzer of New York City, Columbia Gas System Service Corp.; B. C. Adams, Jr., of Kansas City, Mo., The Gas Service Co.; Harold F. Carr of Baltimore, Baltimore Gas & Electric Co.; R. H. Combs of Tulsa, Oklahoma Natural Gas Co.; J. Robert Delaney of Cincinnati, Cincinnati Gas & Electric Co.; H. William Doering of Springfield, Mass., Springfield Gas Light Co.; E. L. Henderson of Shreveport, La., United Gas Corp.; D. J. Kerr of Dallas, Southern Union Gas Co.; J. S. McElwain of Cleveland, The East Ohio Gas Co.; F. N. Seitz of Los Angeles, Southern Counties Gas Co.; G. J. Tankersley of Louisville, president of Western Kentucky Gas Co.; R. J. Vandagriff of St. Louis, Laclede Gas Co.; and Charles R. Bowen of AGA, New York City, secretary of the committee.

NEMA Reports 12-Cu. Ft. Household Refrigerator Leads In 9-Mo. Sales

NEW YORK CITY—Leading household refrigerator in sales for the first nine months of this year by size of unit was the 12-cu. ft. item with a total of 26.2% of overall sales, according to National Electrical Manufacturers Association's round-up of figures.

Second highest selling model was the 8-cu. ft. size with 18.4% of total sales, slightly ahead of the 13-cu. ft. unit with 18.2%.

Farm and home freezers in the 9 to 14-cu. ft. class topped sales for the period with 38.1% of the total, well above the 26.8% grabbed by 15 to 17-cu. ft. size, NEMA reported.

TOTAL SALES OF ELECTRIC HOUSEHOLD REFRIGERATORS AND ELECTRIC FARM AND HOME FREEZERS

DISTRIBUTION BY SIZE OF UNIT

Electric Household Refrigerators	First Nine Months, 1957 Per Cent
7 cu. ft. and under	1.7
8 cu. ft.	18.4
9 cu. ft.	4.3
10 cu. ft.	16.0
11 cu. ft.	15.2
12 cu. ft.	26.2
13 cu. ft. and over	18.2
Total	100.0
Electric Farm and Home Freezers	
8 cu. ft. and under	3.7
9-14 cu. ft.	38.1
15-17 cu. ft.	26.8
18-19 cu. ft.	14.0
20 cu. ft. and over	17.4
Total	100.0

(Includes 45.5% for chest and 54.5% for upright models.)

Norge Raises Gas Range Prices 5%

CHICAGO—A 5% increase in the factory price of Norge gas ranges was announced recently by Harold P. Bull, vice president of distribution, Norge Div., Borg-Warner Corp. The increase is expected to up suggested list prices by $10 to $20.

Sales Volume Rise 'Averages 30% per Year' So Chicago Blower Doubles Plant Production Capacity

CHICAGO — Addition of 40,000 sq. ft. to Chicago Blower Corp's. plant in Franklin Park, Ill. has doubled its production capacity, F. H. Gohl, president, said recently in announcing completion of the new manufacturing facility.

According to Gohl, the addition was necessitated by the "extraordinary" growth of the company since it was founded in 1947. Sales volume has increased an average of 30% a year since that time, and sales this year are expected to be 40% over the 1956 figure, he said.

The quarter million dollar addition will provide room for lengthening of production lines, resulting in reduced material handling and a more automated system of production, it was pointed out. Also, room for further expansion was allowed for in planning the new structure.

O. A. Sutton Names Schmidt Engineering Chief

WICHITA, Kan. — Appointment of Walter Schmidt as vice president of engineering for The O. A. Sutton Corp., Inc. has been announced by Dale W. Gordon, executive vice president.

Schmidt was formerly associated with Whirlpool Corp. at Evansville, Ind. as chief engineer. Previous to that time he served as director of engineering for Remington Corp. Air Conditioner Div., chief engineer for the Anheuser Busch Refrigeration Cabinet Div., and was with General Electric.

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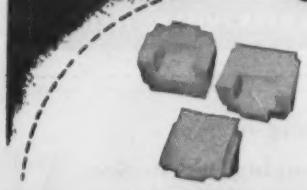

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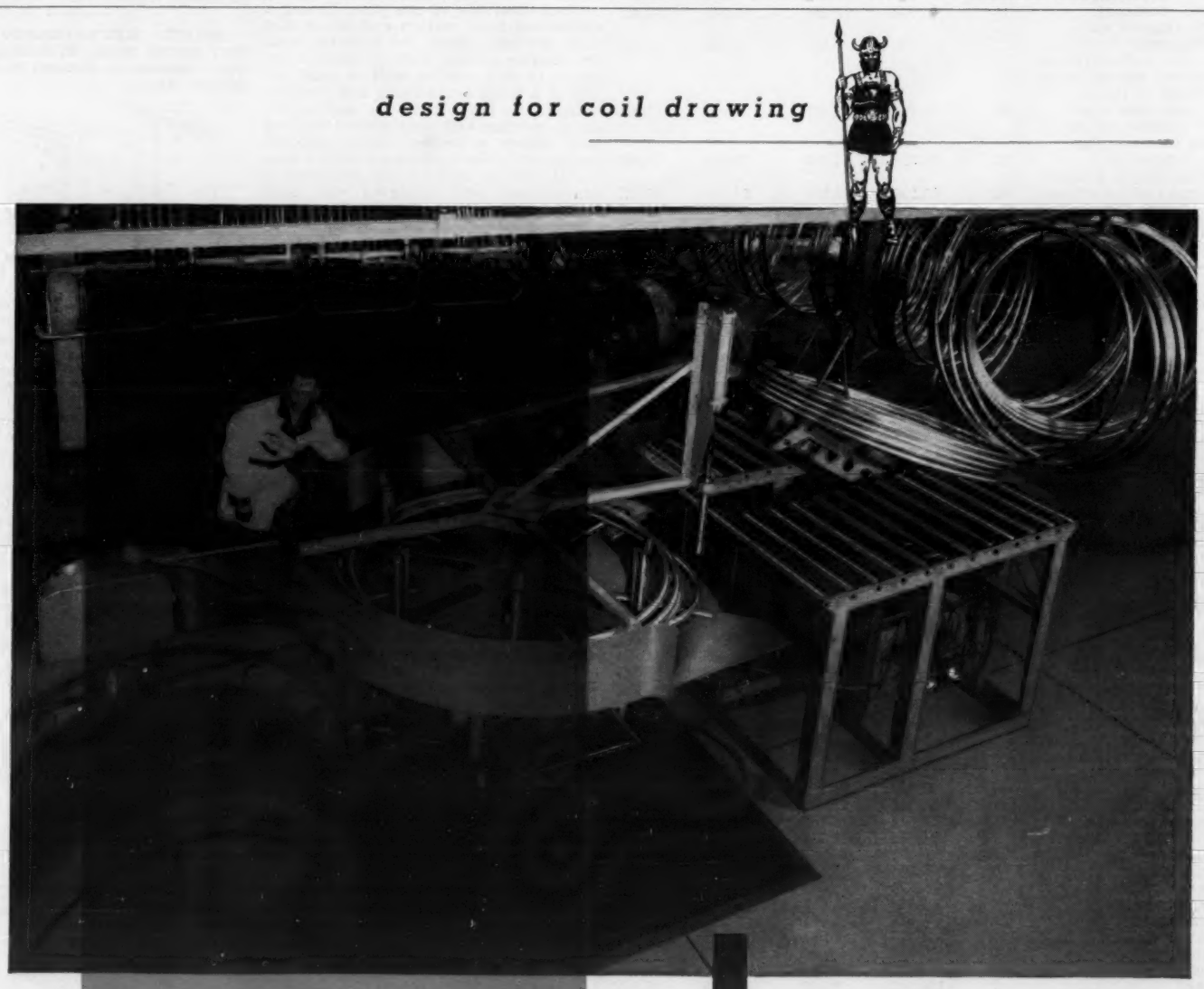

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With the pioneering spirit of the Vikings of old, skilled VIKING Design and Production Engineers are seeking always to create a tube that will do the job better, faster and at lowest cost. The result is increasing acceptance for VIKING Copper Tube by more and more manufacturers of air conditioning and refrigeration units and coils.

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An electronic "Brain" detects the minutest flaw or imperfection in the walls of VIKING tubes . . . automatically discarding defective tubes. Trouble-free fabrication is virtually guaranteed — operational failures almost completely eliminated.

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